SERVICE MANUAL

COMPUTERIZED FULL AUTOMATIC QUARTZ-SERVO TURNTABLE

SANSUI XR-Q9

Sansui

SANSUI ELECTRIC CO., LTD.

SPECIFICATIONS

Type	Two-speed direct-driven
Speeds	33-1/3, 45 rpm
Platter	Aluminum alloy die-cast 350 mm (13-3/4") diameter 1.7 kg (3.74 lbs)
Motor	DC Brushless servo-type (Quartz-servo)
Wow and flutter	Less than 0.022 % (WRMS) Less than 0.015 % (WRMS-read out direct at the FG output)
S/N	Better than 62 dB (IEC-B)
Rumble	Better than 78 dB (DIN-B)
Tonearm	Statically-balanced type
Tonearm length	245 mm (9-11/16")
Overhang	16 mm (5/8")
Optimum cartridge weight When the headshell supplied is employed	4 ~ 10 g
Dimensions	483 mm (19") W 142 mm (5-5/8") H 420 mm (16-9/16") D
Weight	11.6 kg (25.5 lbs) net 13.6 kg (30 lbs) packed
Power consumption	25 W

●The power voltage is adjusted to the one of the area where you bought the unit.

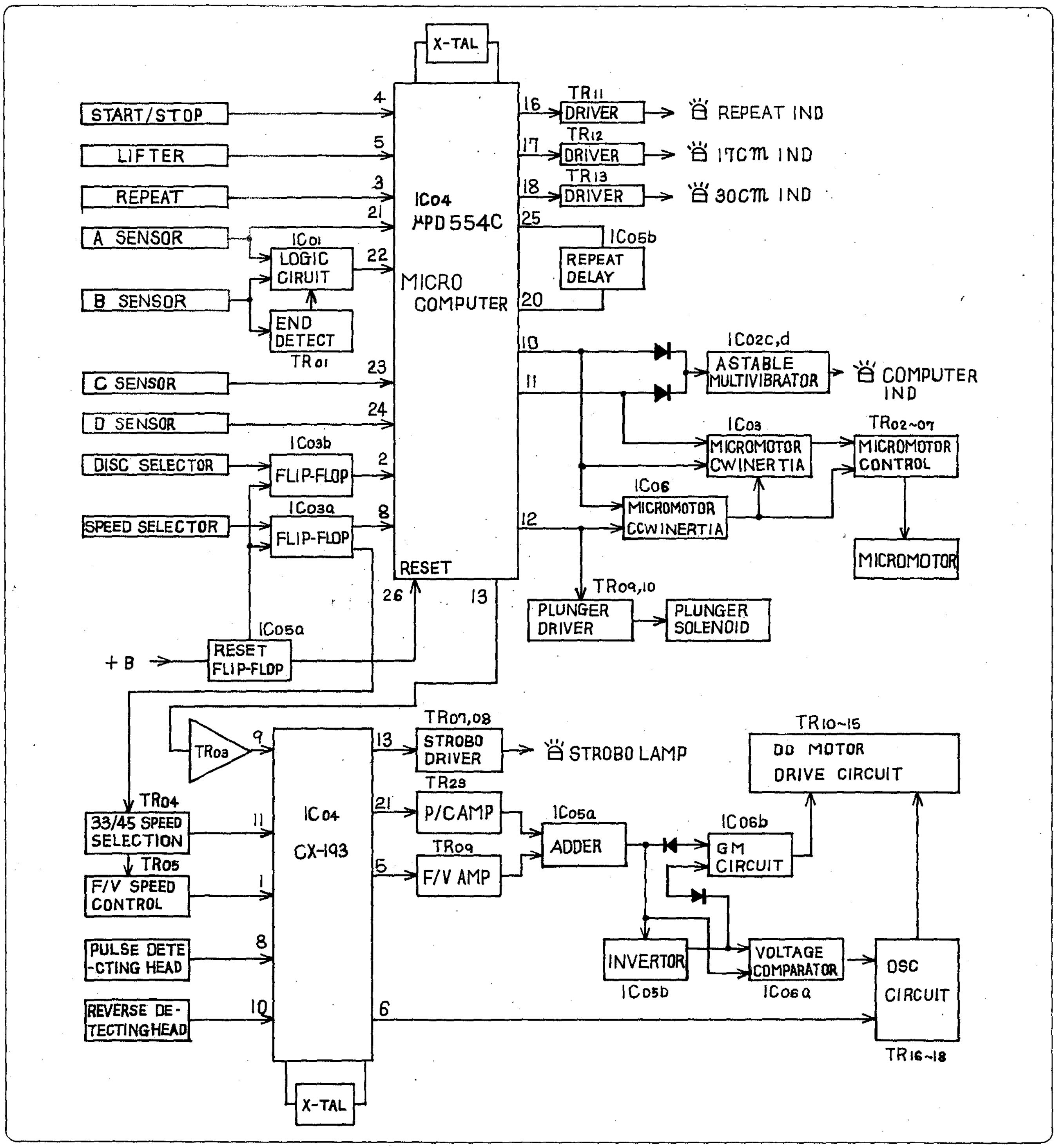
Specifications of the cartridge (applicable only to the units with cartridge)

Model SV-101

Type	Dual magnet
Frequency response	10 ~ 20,000 Hz
Output voltage	2.5 mV per channel (1,000 Hz, 35.4 mm/sec)
Load impedance	47 kΩ
Tracking force	2 g
Stylus	0.6 mil, diamond spherical (SN-101)

*Design and specifications subject to change without notice for improvements.
*In order to simplify the explanation illustrations may sometimes differ from the originals.

1. BLOCK DIAGRAM


X-TAL
START/STOP
LIFTER
REPEAT
A SENSOR
B SENSOR
C SENSOR
D SENSOR
DISC SELECTOR
SPEED SELECTOR
IC01
LOGIC CIRUIT
END DETECT
TR01
IC03b
FLIP-FLOP
IC03a
FLIP-FLOP
IC05a
RESET FLIP-FLOP
+B
IC04
μPD554C
MICRO COMPUTER
RESET
4
5
3
21
22
23
24
2
8
26
13
16
17
18
25
20
10
11
12
TR11
DRIVER
REPEAT IND
TR12
DRIVER
17cm IND
TR13
DRIVER
30cm IND
IC05b
REPEAT DELAY
IC02c,d
ASTABLE MULTIVIBRATOR
COMPUTER IND
IC03
MICROMOTOR CW INERTIA
TR02~07
MICROMOTOR CONTROL
IC06
MICROMOTOR CCW INERTIA
MICROMOTOR
TR09,10
PLUNGER DRIVER
PLUNGER SOLENOID
TR03
9
TR04
33/45 SPEED SELECTION
TR05
F/V SPEED CONTROL
PULSE DETECTING HEAD
REVERSE DETECTING HEAD
11
1
8
10
IC04
CX-193
X-TAL
13
21
5
6
TR07,08
STROBO DRIVER
STROBO LAMP
TR29
P/C AMP
TR09
F/V AMP
IC05a
ADDER
IC06b
GM CIRCUIT
INVERTOR
IC05b
VOLTAGE COMPARATOR
IC06a
TR10~15
DD MOTOR DRIVE CIRCUIT
OSC CIRCUIT
TR16~18

2. OPERATIONS

2-1. General

This automatic turntable uses a microcomputer in the same way as FR-D4/FR-Q5; accordingly, the DD motor start/stop operation and the tone arm operation are automatically controlled. A new lifter function (the lifter can be moved up and down independently in all operations) is provided in addition to the functions of FR-D4/FR-Q5. Also, a newly-developed normal/reverse torque servo circuit is used in the DD motor servo system, in order to keep the revolution speed constant at all times against various load fluctuations by providing a high rate servo control. In addition to these operation features, the automatic turntable is of a howling-proof floating structure type, thereby improving the sound quality in association with a light-weight, Dyna-optimum-balanced-straight tonearm.

2-2. Operation of Each Section

- Concerning the automatic mechanism assembly, the arm position sensor, and the lifter position sensor, refer to description on "Operation 2-2" in Service Manual for FR-D4/D4K.
- The XR-Q9 control circuit can be divided into two sections:

(a) a microcomputer and the peripheral circuits which mainly control the tonearm, and
(b) a servo circuit which controls the DD motor.

A) Microcomputer and the peripheral circuits

1. Microcomputer

The microcomputer μPD554C decides the required motions of the tonearm and DD motor, basing on signals applied to the input ports (Pins 2 ~ 5, 8, and 21 ~ 24), and outputs control signals to the output ports (Pins 16 ~ 18, and 10 ~ 13) in accordance with programs previously stored in the microcomputer. Fig. 2-1 shows the rough relationship between the microcomputer input/output ports and the functions; Fig. 2-2 shows a timing chart of the microcomputer input/output.
As is better understood, the microcomputer becomes active; that is, the circuits connected to each pin begin to operate, if the output port potential is H.

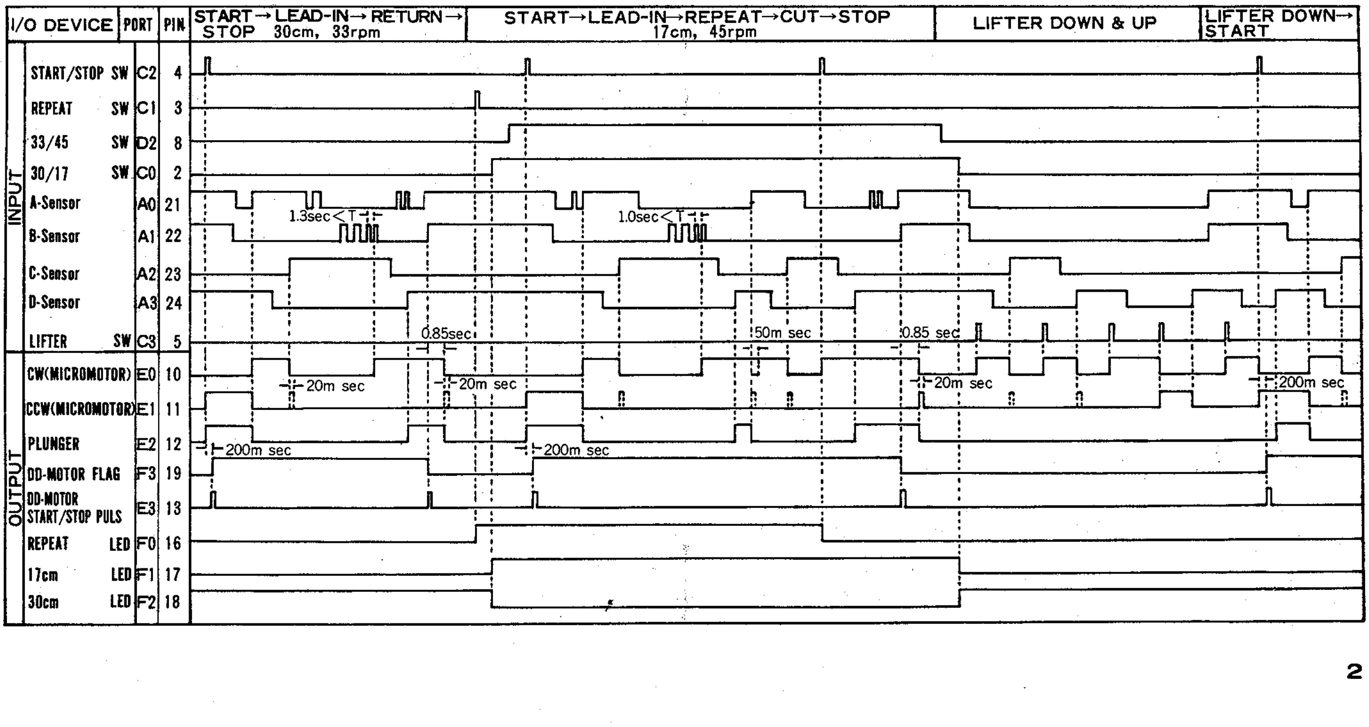
2. Microcomputer peripheral circuits

Since the microcomputer peripheral circuits begin to operate if the output of microcomputer is H, it is necessary that all the pins other than Pin 18 (30 cm indicator) are at L level in the initial state.
Therefore, when the power switch is turned ON, a reset pulse is given to Pin 26 (RES) of the microcomputer through the $IC_{05}a$ (RESET Flip-Flop) so that the output ports may be changed to L level. Fig. 2-3 shows the truth table and a block diagram of the flip-flop. The reset pulse from the $IC_{05}a$ is also applied to the $ICs_{03}a$ and b on the S-0038 to reset these ICs. The $ICs_{03}a$ and b (S-0038) are also flip-flops, the truth table and a block diagram of which are shown in Fig. 2-4.
If the IC_{03} is reset, the Q output (Pins 1 and 13) changes to L, and $\overline{Q}$ output (Pins 2 and 12) H. Pin 13 of the IC_{03} is connected to the input port Cϕ (Pin 2) of the microcomputer; therefore, the 30 cm indicator comes on by setting this level to L. Pin 2 of the IC_{03} is reset to H when the power switch is turned ON, and is connected to

Fig. 2-1 Port and Function of Microcomputer

		Pin No.	Port	Function
INPUT	Operation Circuit	2	Cϕ	A pulse from disc size selector is input through $IC_{03}b$ (flip-flop) to distinguish record sizes.
		5	C3	A pulse from lifter switch is input to move arm lifter up and micromotor.
		4	C2	A pulse from start/stop switch is input to operate tonearm and DD motor in accordance with microcomputer program.
		3	C1	A pulse from repeat switch is input to initialize microcomputer program and to operate the set again, when tonearm returns after record performance completion.
		8	D2	A pulse from speed selector is input through $IC_{02}a$ (flip-flop) to decide record rev. speed.
	Auto Mechanism	22	A1	A signal from B sensor is input through record end detector circuit (TR_{07}) and logic circuit to distinguish whether or not tone arm is at a lead-out position on a record disc.
		23	A2	A signal from C sensor is input to distinguish whether or not lifter comes down completely.
		24	A3	A signal from D sensor is input to distinguish whether or not lifter is completely rised.
OUTPUT	Indicator	16	Fϕ	If repeat SW is depressed, output voltage changes to H level to drive TR_{11} and to make repeat indicator come on.
		17	F1	If disc size selector is depressed and disc size is set to 17 cm, output voltage changes to H level to drive TR_{12} and to make 17 cm disc size indicator come on.
		18	F2	If disc size selector is depressed and disc size is set to 30 cm, output voltage changes to H level to drive TR_{13} and to make 30 cm disc size indicator come on.
	Output Control	10	Eϕ	If this terminal voltage changes to H level, micromotor is rotated counterclockwise by CW/CCW inertia prevention circuit and micromotor drive circuit. At the same time, IC_{02} (astable multivibrator) makes computer indicator blink, informing that tonearm or arm lifter is in operation.
		11	E1	If this terminal voltage changes to H level, micromotor is rotated clockwise by CW/CCW inertia prevention circuit and micromotor drive circuit. At the same time, IC_{02} (astable multivibrator) makes computer indicator blink, informing that tonearm or arm lifter is in operation.
		12	E2	If this terminal voltage changes to H level, TRs $_{09}$ and $_{10}$ (plunger drive circuit) operate to actuate plunger. At the same time, micromotor is rotated clockwise by CW/CCW inertia prevention circuit and micromotor drive circuit.
		13	E3	If start/stop SW is depressed or when tonearm returns after record performance completion, a start/stop pulse is output from this terminal to DD motor control circuit.

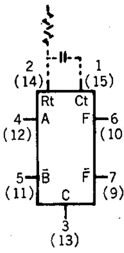
Fig. 2-2 Microcomputer Timing Chart



the input port D2 (Pin 8) of the microcomputer through the invertor; accordingly, this input port changes to L. Also, since Pin 1 of the IC$_{03}$ is connected to the IC$_{04}$ (CX-193) through the TR$_{04}$ and TR$_{05}$, the revolution speed of the DD motor is preset. The output of Pin 1, through the invertor at the same time, turns the TR$_{19}$ and TR$_{21}$ ON, thereby making the 33/45 indicator come ON. Therefore, when the power switch is turned ON, the microcomputer is reset, and the IC$_{03}$ presets the turntable to an initial state of 33 rev., 30 cm disc if the tonearm is on the rest.

Fig. 2-3 Internal Block Diagram of IC

● TC4528BP



INPUT			OUTPUT	
A	B̄	C	F	F̄
L	↓	H	⊓	⊔

3. Micromotor control circuit and CW/CCW inertia prevention circuit

When the power switch is turned ON, the CW/CCW inertia prevention circuit and the micromotor control circuit are in the states as shown in Fig. 2-4 by using symbols Ⓗ, Ⓛ or ON, OFF.

The counterclockwise revolution of the micromotor corresponds to the tonearm lead-in motion (plunger solenoid: ON) and lifter-down motion (plunger solenoid: OFF); the clockwise revolution corresponds to the tonearm lead-out motion (plunger solenoid: ON) and lifter-up motion (plunger solenoid: OFF). Therefore, when the start/stop switch is depressed and the tonearm leads in, the micromotor must rotate counterclockwise.

As is clearly shown in Fig. 2-2 (microcomputer timing chart), if the start/stop switch is depressed, the microcomputer output ports E1 (Pin 11) and E2 (Pin 12) are set to H level and, therefore, the plunger solenoid is turned ON, the revolution of the micromotor being transmitted to the tonearm. Also, since the output port E1 (Pin 11) is connected to Pin 8 of the IC$_{03}$ in the inertia prevention circuit, and E2 (Pin 12) is connected to Pin 1 of the IC$_{06}$a, if the output ports E1 (Pin 11) and E2 (Pin 12) are set to H level, each gate output of the inertia prevention circuit changes as follows: IC$_{06}$a changes to H, IC$_{03}$d to L, IC$_{06}$c to H, IC$_{06}$d to H, and IC$_{06}$b to H. Thus, the TR$_{02}$ of the micromotor control circuit is kept to be ON. Also, since the IC$_{03}$a changes to L, IC$_{03}$b to L, and IC$_{03}$c to L, the TR$_{03}$ is turned OFF and the TRs$_{04}$ and $_{07}$ are turned ON, thus the micromotor beginning to rotate counterclockwise.

If the tonearm comes to the lead-in position, next the lifter comes down. In order that the lifter comes down, the micromotor must rotate clockwise and the plunger solenoid must go OFF. Therefore, in Fig. 2-2, after the output port E1 (Pin 11) has been set to H (the micromotor rotates counterclockwise), E0 (Pin 10) changes to H (the micromotor rotates clockwise), at the same time E2 (Pin 12) changes to L, and the plunger solenoid goes OFF.

Since the microcomputer output port E0 (Pin 10) is H and E1 (Pin 11) and E2 (Pin 12) are L in this state (while the lifter is coming down), each gate output of the inertia prevention circuit changes as follows: IC$_{06}$a changes to H, IC$_{03}$d to L, IC$_{06}$c to H, IC$_{06}$d to H, and IC$_{06}$b to L. Thus, the TR$_{02}$ is turned OFF and TRs$_{06}$ and $_{05}$ are turned ON. Also, the IC$_{03}$a changes to H, IC$_{03}$b to L, and IC$_{03}$c to H. If the tonearm comes to the lead-in position and the lifter comes down completely, the micromotor stops. However, even if the sensor C detects the lifter-down end position and makes change of the microcomputer output ports E0 (Pin 10), E1 (Pin 11) and E2 (Pin 12) to L, the micromotor cannot stop immediately from a state of the normal revolution because of micromotor inertia. Unless the micromotor stops immediately, this may cause malfunctions such that the lifter rotates excessively so that the sensor operates unstably or such that the lifter cannot come down to the end. Therefore, in order to prevent these malfunctions, it is necessary to stop the micromotor immediately when the lifter comes down to the end. For this reason, a CW inertia prevention circuit is provided to flow a current in such a way that an instant counterclockwise torque will be generated in the micromotor.

When the lifter comes down completely and the lead-in movement is finished, each gate output of the inertia prevention circuit changes as follows: IC$_{06}$a changes to H, IC$_{03}$d to L, IC$_{06}$c to H, IC$_{06}$d to H, and IC$_{06}$b to H. Thus, the TR$_{02}$ is turned ON, and the TRs $_{06}$ and $_{05}$ are turned OFF. Accordingly, no current flows to rotate the micromotor clockwise. In addition, since the IC$_{03}$a changes from H to L, the C$_{35}$ begins to discharge and the Pin 5 of the IC$_{03}$b stays L only during the period of time determined by a time constant of C$_{35}$×R$_{61}$ and a threshold voltage of IC$_{03}$b.

As a result of this, the IC$_{03}$b output changes to H for an instant and the IC$_{03}$c output also changes to L for an instant; that is, the TR$_{03}$ is turned OFF and the TRs $_{07}$ and $_{04}$ are turned ON only during the period of time determined by the C$_{35}$ and R$_{61}$, thus an instant counterclockwise micromotor torque being generated to prevent the motor from rotating clockwise; that is, to prevent the motor inertia.

Fig. 2-4

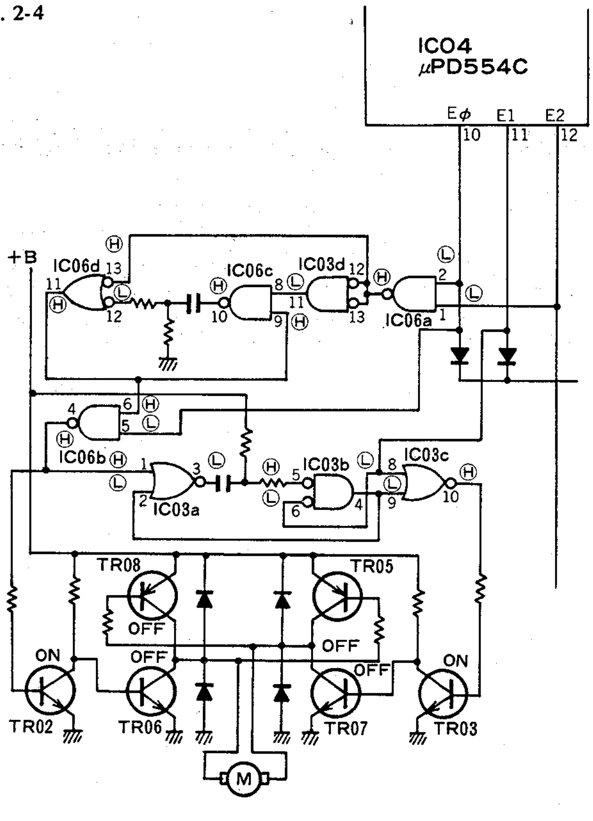
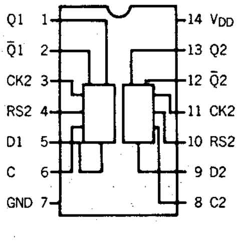


Fig. 2-5 Internal Block Diagram of IC

● MSM4013



INPUT				OUTPUT	
CK	D	C	RS	F	F̄
↑	L	L	L	L	H
↑	H	L	L	H	L
—	—	L	H	L	H

B) Servo circuit

Forming a loop as shown in Fig. 2-6, the servo circuit for controlling the DD mootor is of a speed and phase control system in which speed control using a F/V (frequency-voltage) converter and phase control using a quartz oscillator are combined together. Also, by using the inverter ($IC_{05}b$) and the voltage comparator ($IC_{06}a$), the TR_{16} is switched so that a reverse torque may be generated in case when the DD motor rotates at more than the rated revolution speed (33 or 45 rpm) or is stopped from the rated revolution speed.

1. Quartz servo system and CX-193 operation

Fig. 2-7 shows a block diagram of the CX-193. While the DD motor is rotating at the rated speed, speed detecting pulses are generated by the pulse detecting heads (L_{701} and $_{702}$) depending upon the magnetic pole on the interior surface of the turntable. In this case, the signal generated from the L_{701} lags the signal generated from the L_{702} by a phase angle of 90°.

The speed detecting pulse generated from the L_{701} is supplied to Pin 8 of the CX-193 through a limiting amplifier. In the CX-193 is generated a pulse synchronized with the input speed detecting pulse by a trigger pulse generator. Next, the pulse is divided into a pulse given to the F/V (frequency-voltage) converter and sample & hold circuit, and a pulse given to the phase comparator. In the phase comparator, the phase of the trigger pulse fed from the pulse detecting head is compared with that of the reference pulse (533.3 Hz at 33 rpm, and 720 Hz at 45 rpm) obtained by dividing a quartz oscillator output (3.6864 MHz), and the compared output is given to the $IC_{05}a$ (adder) after being smoothed by a low-pass filter as shown in Fig. 2-9.

On the other hand, in the F/V converter, a Triangular waveform signal (2), as shown in Fig. 2-8 (e), the peak voltage of which is proportional to the revolution speed, is generated depending on the trigger pulse. When the trigger pulse is applied, the sample & hold circuit samples the F/V converter signal, and holds the signal until the next trigger pulse is applied, converting a signal shown in Fig. 2-8 (e) into a servo signal shown in Fig. 2-8 (f). The servo signal thus obtained is given to the $IC_{05}a$ (adder) through a low-pass filter. In the adder are added the output from the F/V converter and sample & hold circuit and the output from the phase comparator, in order to apply them to the next stage $IC_{06}b$ (current amplifier). In the current amplifier are controlled the collector currents of the TRs $_{10}$ and $_{12}$, in proportion to the adder output, in order to control the DD motor.

Fig. 2-6 Construction of Quartz-Servo System

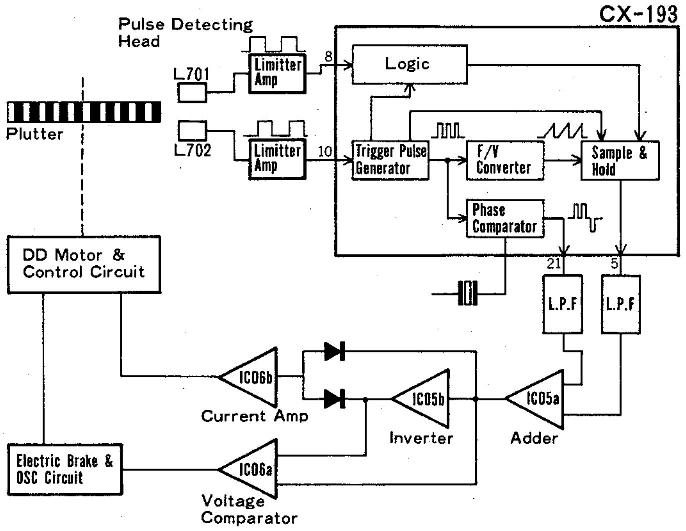
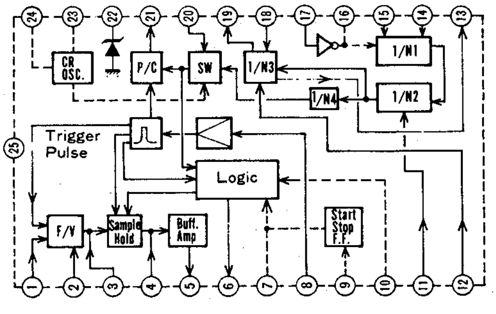

CX-193
Pulse Detecting Head
L701
L702
Limitter Amp
Limitter Amp
8
10
Logic
Trigger Pulse Generator
F/V Converter
Sample & Hold
Phase Comparator
Plutter
DD Motor & Control Circuit
21
5
L.P.F
L.P.F
IC06b
Current Amp
IC05b
Inverter
IC05a
Adder
Electric Brake & OSC Circuit
IC06a
Voltage Comparator

Fig. 2-7 Internal Block Diagram of IC

● CX-193


CR OSC.
P/C
SW
1/N3
1/N1
1/N2
1/N4
Trigger Pulse
Logic
F/V
Sample Hold
Buff. Amp
Start Stop F.F.
1
2
3
4
5
6
7
8
9
10
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25

Fig. 2-8 Waveforms generated in F/V Converter

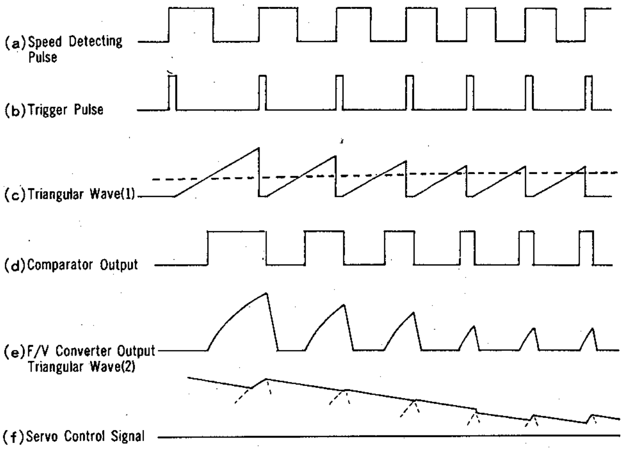
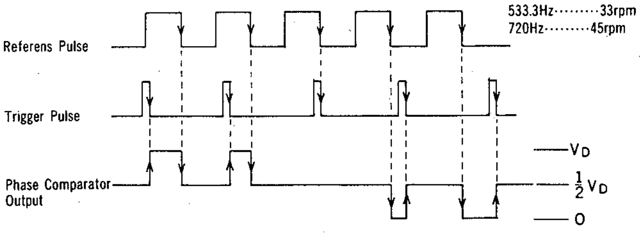


Fig. 2-9 Operation of Phase Comparator



3. ADJUSTMENTS

3-1. Auto-Return Adjustment

1. Adjustment of slit plate fitting position

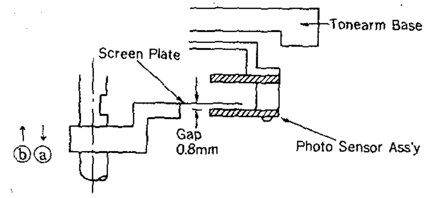
Temporarily fix the slit plate to the tonearm axle as illustrated in Figs. 3-1 (A) and (B) with the tonearm kept positioned on the arm rest.

2. Adjustment of B sensor output

1) Connect oscilloscope leads across the TP$_{01}$ and the GND and set the DC/AC selector switch to DC and the test ranges to 1V/div. and 1 msec./div.
2) With the tonearm kept positioned on the arm rest, first rotate the VR$_{02}$ (S-0048) clockwise, next slowly rotate it counter-clockwise, and then stop it just before an increase in the TP$_{01}$ voltage is saturated. In this case, set the TP$_{01}$ voltage so as to be 3.8V or more.
3) Set the oscilloscope test ranges to 1V/div. and 0.1 sec./div. Bring the tonearm to the lead-in groove portion on a record by hand, and slowly move it right and left so that it may take about 2 seconds to pass the slit C in Fig. 3-1 (B) through between the LED and the phototransistor.
4) If the TP$_{01}$ output is a sine wave without any clipping distortion and the peak-to-peak value is:
   1 less than 2.2V,
   adjust it to 2.2V by rotating the VR$_{02}$ (S-0048).
   2. if it is impossible to adjust it to 2.2V, or clipping distortion is still observed,
   move the slit plate in a direction ⓐ in Fig. 3-1 (A), and adjust it again beginning from step 1 .
   3. more than 2.2V,
   move the slit plate in a direction ⓑ in Fig. 3-1 (A), and adjust it again beginning from step 1 .
5) After the above adjustment, make sure that the TP$_{01}$ voltage is 3.8V or more with the tonearm kept positioned on the arm rest, before fixing the slit plate.

Fig. 3-1 Installation of Screen Plate

(A)Side View of Screen Plate



(B)Bottom View of Screen Plate
Note: Tonearm is placed on its rest.

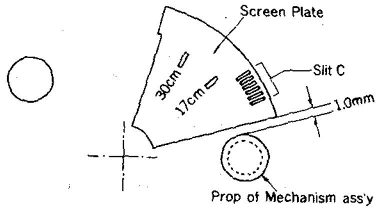
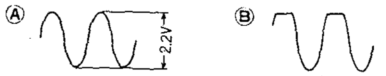


Fig. 3-2 Output Waveform Adjustment on B-Sensor



*Adjust the waveform on display as Ⓐ

3-2. Lead in Adjustment

By using 30 cm and 17 cm sized records having a narrow lead-in groove portion, actually carry out the lead-in operation. Adjust the adjust cam ㊾ (See Exploded View of Mechanism Ass'y on Page 11) so that the stylus tip may come down to the middle of the lead-in groove. Be sure that the slit plate is fit to the tonearm as shown in Figs. 3-1 (A) and (B). In this case, if the stylus point is required to be led-in outside, rotate the adjust cam clockwise.

3-3. Repeat Adjustment

By using 30 cm and 17 cm sized records having a narrow lead-in groove portion, actually carry out the repeat operation. Adjust the VR$_{01}$ (S-0046) so that the stylus tip may come down to the middle of the lead-in groove portion.

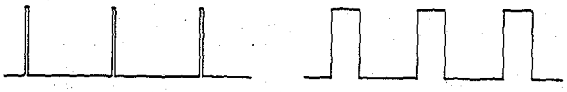
3-4. Rev. Speed Adjustment (PLL adjustment)

Note: 1) Make sure to carry out the speed adjustment at 45 rpm before carrying out the speed adjustment at 33 rpm.
2) Make sure to carry out the adjustment with a rubber sheet on.

A. How to adjust with an oscilloscope

1) Connect oscilloscope leads across the TP$_{02}$ of S-0038 and the GND, and set the test ranges to 2V/div. and 0.5 msec./div.
2) Set the speed selector to 45 rpm.
   Adjust the oscilloscope waveform to the one shown in Fig. 3-3 (A) by rotating the VR$_{02}$ (S-0038). In this case, make the pulse width as narrow as possible.
3) Set the speed selector to 33 rpm.
   Adjust the oscilloscope waveform to the one shown in Fig. 3-3 (A) by rotating the VR$_{01}$ (S-0038).

Fig. 3-3


(A) correct waveform (B) incorrect waveform

*Adjust the pulse width as narrow as possible.

B. How to adjust without an oscilloscope

1) Set the speed selector to 45 rpm.
   Bring the strobo pattern movement to a stop, by rotating the VR$_{02}$ (S-0038).
2) Set the speed selector to 33 rpm.
   Bring the strobo pattern movement to a stop, by rotating the VR$_{01}$ (S-0038).

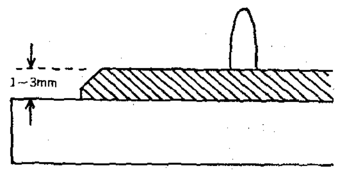
3-5. Electronic Brake Adjustment

Connect DC volt meter leads across the TP$_{04}$ and the TP$_{05}$, then make the set operate. Adjust the voltage across the TP$_{04}$ and the TP$_{05}$ to 0.55V, by rotating the VR$_{03}$ (S-0038).

3-6. Platter Height Adjustment

1) Place the turntable set horizontally.
2) Adjust the front, right, and left sides of the platter and the cabinet as shown in Fig. 3-4, by rotating the screw No. 8 (See Top View on Page 9). In this case, a height difference among the front, right and left must be within 1 mm.

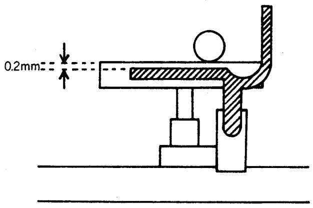
Fig. 3-4



3-7. Lifter Height Adjustment

Adjust the lifter plate and the arm rest as shown in Fig. 3-5, by rotating the screw Ⓑ (See Top View on Page 9).

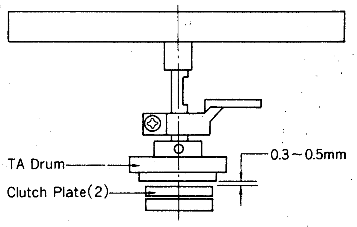
Fig. 3-5



3-8. Gap Adjustment between TA Drum and Clutch Plate (2)

When the automatic mechanism assembly parts such as the tonearm assembly, slit plate, TA drum, or clutch plate are replaced with new ones, adjust a gap between the TA drum and the clutch plate so as to be 0.3 to 0.5 mm as shown in Fig. 3-6. (It is possible to assemble the arm base with the automatic mechanism assembly installed in the cabinet.)

Fig. 3-6

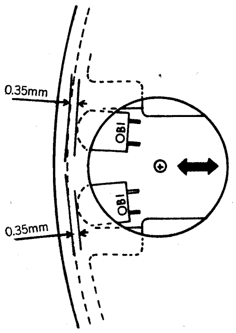


3-9. Gap Adjustment between Pulse Detecting Head and Platter (Fig. 3-7)

Note: Adjust the gap when the pulse detecting head Ass'y or the platter is replaced with a new one.

Put an appropriate spacer between the pulse detecting head and the platter, and install the head with screws so that the gap may become 0.35 mm. (The three sheets of this Service Manual paper cover are approximately 0.35 mm in thickness.)

Fig. 3-7

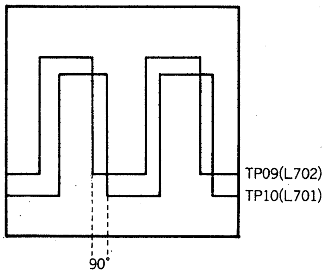


3-10. Phase Adjustment between Pulse Detecting Heads (Fig. 3-8)

Note: The pulse detecting head Ass'y is supplied as to be adjusted the distance between the heads ($L_{701},\ _{702}$).
Avoide to carry out this adjustment without dual trace oscilloscope.

1) Connect oscilloscope across TP_{09} and GND, then make the set operate.
2) Adjust the pulse detecting head adjusting screw, that the signal generated from L_{701} may lag signal generated from L_{702} by a phase angle of 90°.

Fig. 3-8



4. MAIN PARTS REPLACEMENT

4-1. Tonearm Assembly (55) Replacement

1) Remove the bottom plate.
2) Loosen three screws ⑦ to remove the mechanism assembly.
3) Loosen the fixing screw ㉟ to remove the TA drum.
4) Loosen the screw ㊲ to remove the slit plate assembly.
5) Remove the lead wire attached to the tonearm.
6) Remove a string of the inside force canceler (54) .
7) Loosen the fastening nut to extract the tonearm.

* In installing the slit plate assembly, and TA drum assembly, refer to Figs. 3-1 (A) and (B), and Fig. 3-6.

4-2. Plunger Assembly ⑯ Replacement

1) Remove the bottom plate.
2) Loosen three screws ⑦ to extract the mechanism assembly.
3) Remove the E type washer ⑪ .
4) Loosen two screws ⑮ to remove the plunger assembly.

4-3. Replacement of Circuit Board under the Console Panel

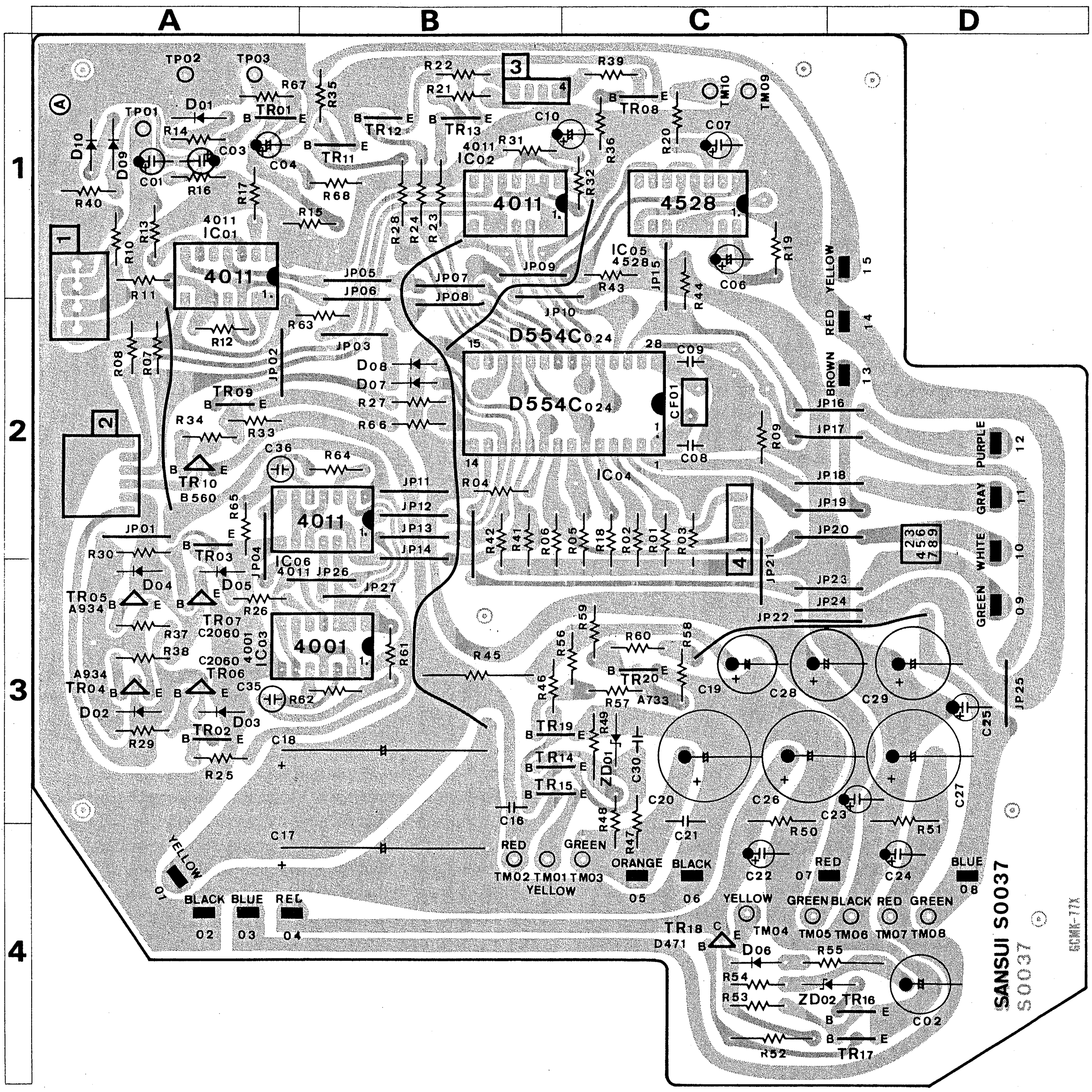
1) Remove the bottom plate.
2) Loosen three console panel fastening screws A , and remove the console panel to take off the circuit boards on the reverse side. (Refer to the bottom view on Page 9).

5. PARTS LOCATION & PARTS LIST

- Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the new Common Parts List for capacitors & resistors.
- As the stock number in the parts list on this service manual is indicated in 8 digit to differ from ordinary 7 digit, please be careful when ordering parts.

5-1. S-0037 Control Circuit Board (Stock No. 13004901)

Conductor Side


A
B
C
D
1
2
3
4
TP01
TP02
TP03
D01
D02
D03
D04
D05
D06
D07
D08
D09
D10
TR01
TR02
TR03
TR04 A934
TR05 A934
TR06 C2060
TR07 C2060
TR08
TR09
TR10 B560
TR11
TR12
TR13
TR14
TR15
TR16
TR17
TR18 D471
TR19
TR20 A733
4011 IC01
4011 IC02
4001 IC03
D554C024 IC04
4528 IC05
4011 IC06
CF01
ZD01
ZD02
JP01
JP02
JP03
JP04
JP05
JP06
JP07
JP08
JP09
JP10
JP11
JP12
JP13
JP14
JP15
JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP26
JP27
C01
C02
C03
C04
C06
C07
C08
C09
C10
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C35
C36
R45
R55
TM01
TM02
TM03
TM04
TM05
TM06
TM07
TM08
TM09
TM10
YELLOW 15
RED 14
BROWN 13
PURPLE 12
GRAY 11
WHITE 10
GREEN 09
YELLOW 01
BLACK 02
BLUE 03
RED 04
ORANGE 05
BLACK 06
RED 07
BLUE 08
SANSUI S0037

Parts List

Parts No.	Stock No.	Description
●Transistor		
TR01	03059501	2SC945 Q
TR02	03059501 ~ 3	2SC945 Q, P, K
TR04	03012200, 1	2SA934 P, Q
TR06	03069100, 1	2SC2060 P, Q
TR08	03059501 ~ 3	2SC945 Q, P, K
TR10	03033601, 2	2SB560MP E, F
TR11	03059501 ~ 3	2SC945 Q, P, K
TR16	03059502, 3	2SC945 P, K
TR18	03085901, 2	2SD471 L, K
TR19	03059501, 2	2SC945 Q, P
TR20	03006800, 1	2SA733-2 P, Q
TR24	03059502, 3	2SC945 P, K
●IC		
IC01A	03604000	MSM4011
IC01C	03604100	TC4011P
IC01D	07106900	MSM4011BRU
IC03A	03609500	MSM4001RS
IC03D	03610500	TC4001BP
IC04	03610400	µPD554C-024
IC05	03612900	TC4528BP
CF01	09300700	Ceramic Filter
●Diode		
D01	03111600	1S2473D
D02	03111600	1S2473D
D06	03103400	10D1
D07	03111600	1S2473D
D09	03111600	1S2473D
●Zener Diode		
ZD01	03166300	RD5.1E
ZD02	03164300	RD7.5E B
VS01	03401200	VD1212
R45	00190800	560Ω 2W N.I.R.
R55	00141000	33Ω 1W N.I.R.
C10	00306800	1µF 50V E.B.
C17	00283400	470µF 50V E.C.
C35	00306800	1µF 50V E.B.

41

SERVICE BULLETIN

COMPUTERIZED FULL AUTOMATIC QUARTZ-SERVO TURNTABLE

SANSUI XR-Q9

April 1981
Ref. AN-114
QUALITY ASSURANCE DEPT.

- *This Bulletin applies to all Model XR-Q9 after Serial No. 331020001.*

On Model XR-Q9 with Serial No. before 331020000, refer to Model XR-Q9 Service Manual previously supplied.
Therefore, when ordering parts or servicing, check the serial No. of the set, then use either this issue or the Service Manual.

** For an easy reference, please bind this bulletin together with Model XR-Q9 Service Manual.*

Specifications

Type	Two-speed direct-driven
Speeds	33-1/3, 45 rpm
Platter	Aluminum alloy die-cast 350 mm (13-3/4") diameter, 1.7 kg (3.74 lbs)
Motor	DC Brushless servo-type (Quartz-servo)
Wow and flutter	Less than 0.022 % (WRMS) Less than 0.015 % (WRMS-read out direct at the FG output)
S/N	Better than 62 dB (IEC-B)
Rumble	Better than 78 dB (DIN-B)
Tonearm	Statically-balanced type
Tonearm length	245 mm (9-11/16")
Overhang	16 mm (5/8")
Optimum cartridge weight When the headshell supplied is employed	4 ~ 10 g
Dimensions	483 mm (19") W 142 mm (5-5/8") H 420 mm (16-9/16") D
Weight	11.6 kg (25.5 lbs) net 13.6 kg (30 lbs) packed
Power consumption	25 W

- The power voltage is adjusted to the one of the area where you bought the unit.

Spécifications de la cartouche (applicables uniquement pour les appareils à cartouche)

Modèle SV-101

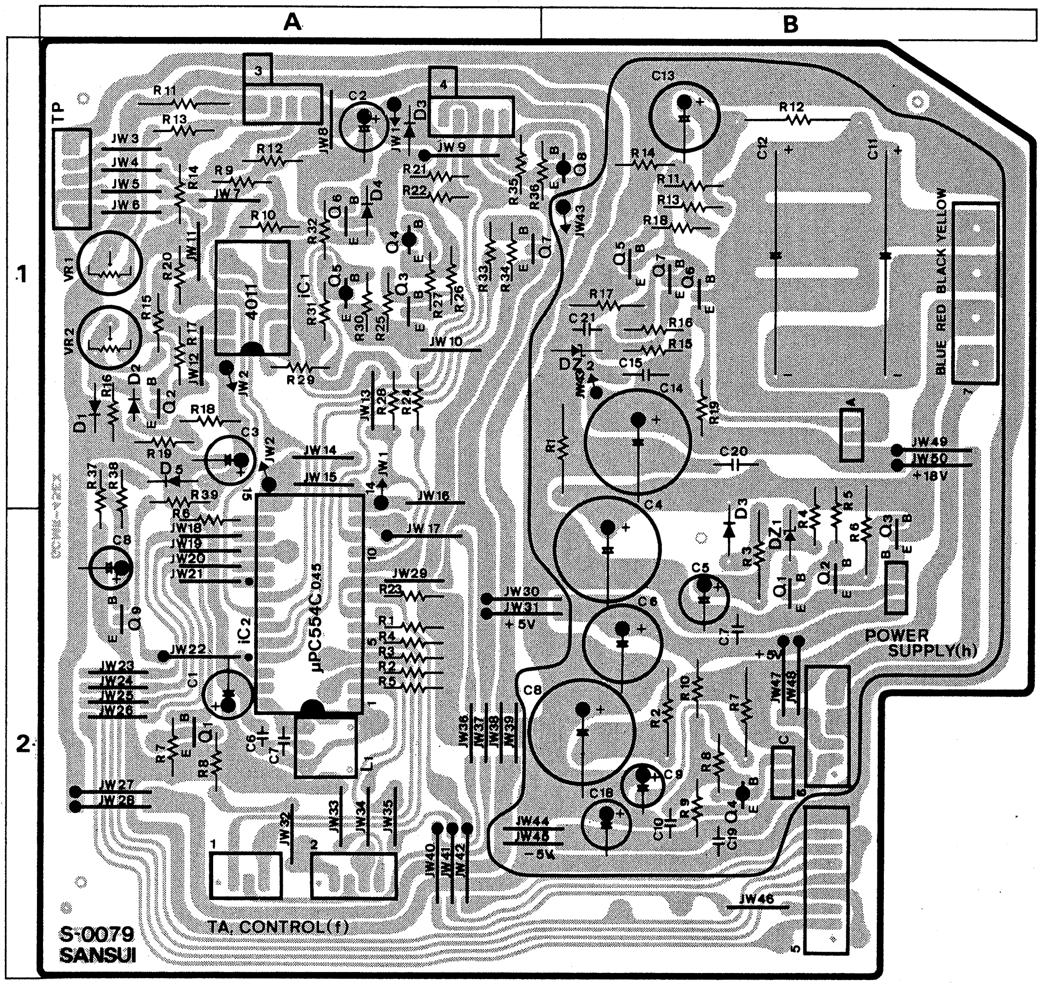
Type	Double aimant
Réponse de fréquence	10 ~ 20.000 Hz
Tension de sortie	2,5 mV par canal (1.000 Hz 35,4 mm/s)
Impédance de charge	47 kΩ
Force sur le sillon	2 g
Pointe de lecture	Diamant sphérique, 0,6 mil, (SN-101)

- * **La présentation et spécifications sont susceptibles d'être modifiées sans prévis par suite d'ameliorations éventuelles.**
- * **Pour simplifier les explications, les illustrations peuvent quelquefois être différentes des originaux.**

1. PARTS LOCATION & PARTS LIST

1-1. S-0079 TA Control Circuit Board (Stock No. 13067301)

Component Side

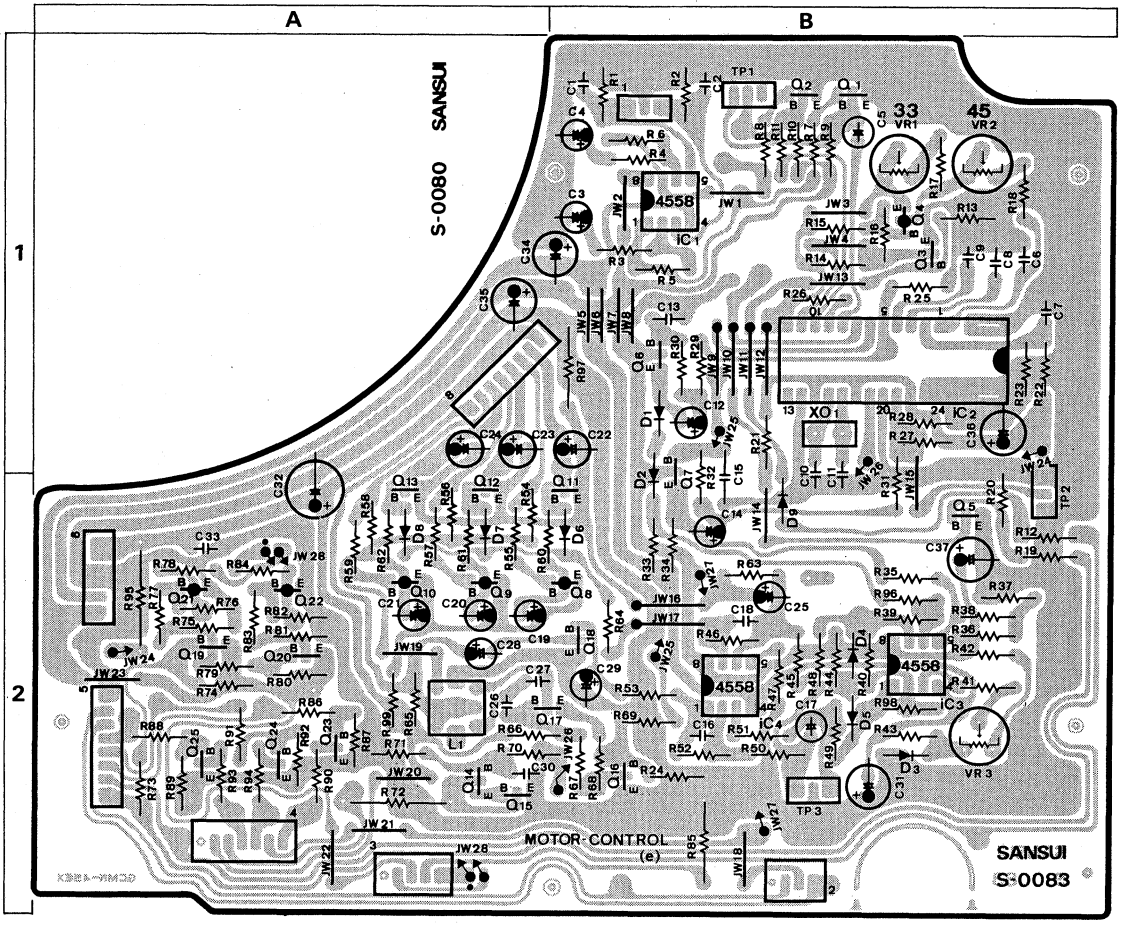


Parts List

Parts No.	Stock No.	Description
●Transistor		
fQ1	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
fQ2	07194800	2SC1815 Y
	or 03059501	2SC945 Q
fQ3	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
fQ4	07254800, 1	2SA854 Q, R
	or 07206800, 1	2SA952 M, L
fQ5	07194700, 1	2SA1015 Y, GR
	or 07970001, 2	2SA733A Q, P
	or 07299601, 2	2SA1115 E, F
fQ6	07254900, 1	2SC1741 Q, R
	or 07206900, 1	2SC2001 M, L
fQ7	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
fQ8	03012200 ~ 2	2SA934 P, Q, R
	or 07260000 ~ 2	2SA935 P, Q, R
fQ9	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
hQ1	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
hQ2	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P
	or 07299701, 2	2SC2603 E, F
hQ3	03085901	2SD471 L, K
	or 03069101, 2	2SC2060 Q, R
	or 07262801, 2	2SC2061 Q, R
hQ4	07194700	2SA1015 Y, GR
	or 07197001, 2	2SA733A Q, P
	or 07299601, 2	2SA1115 E, F
hQ5	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701	2SC2603 E, F
hQ6	03059301	2SC1211 D
	or 03062801	2SC1735 D, E
hQ7	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
●ICs		
fIC1	07207200	MB84011BM
	or 03604100	TC4011P
fIC2	07260600	µPD554C
●Diodes		
fD1	03111600	1S2473D
fD2	46079300	MV-13
fD3	03111600	1S2473D
fD4	03111600	1S2473D
fD6	03103400	10D1
hD3	03103400	10D1
●Zener Diode		
hDZ1	03164100	RD6.8E B
hDZ2	03166300	RD5.1E
●Coil		
fL1	42306100	AM IF Coil
●Semi-variable Resistors		
fVR1	10351100	4.7kΩ (B)
fVR2	10351500	22kΩ (B)
●Resistors		
hR12	00190800	560Ω 2W N.I.R.
hC11	00283400	470µF 50V
hC12	00283400	470µF 50V

1-2. S-0083 Motor Control Circuit Board (Stock No. 13067301)

Component Side



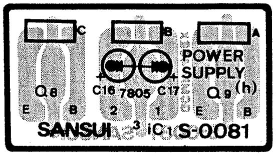
Parts List

Parts No.	Stock No.	Description
●Transistors		
eQ1	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ2	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ3	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ4	07194700, 1	2SA1015 Y, GR
	or 07197001, 2	2SA733A Q, P
	or 07299601, 2	2SA1115 E
eQ5	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ6	07194800	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701	2SC2603 E, F
eQ7	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ8	07194700, 1	2SA1015 Y, GR
	or 07194700, 1	2SA1015 Y, GR
	or 07197001, 2	2SA733A P, Q
eQ10	07194700, 1	2SA1015 Y, GR
	or 07197001, 2	2SA733A Q, P
eQ11	03085901, 2	2SD471 L, K
	or 03069101, 2	2SC2060 Q, R
	or 07262801, 2	2SC2061 Q, R
eQ12	03085901, 2	2SD471 L, K
	or 03069101, 2	2SC2060 Q, R
	or 07262801, 2	2SC2061 Q, R
eQ13	03085901, 2	2SD471 L, K
	or 03069101, 2	2SC2060 Q, R
	or 07262801, 2	2SC2061 Q, R
eQ14	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ15	03069100 ~ 2	2SC2060 P, Q, R
	or 07262800 ~ 2	2SC2061 P, Q, R
	or 03085901, 2	2SD471 L, K
eQ16	07194800	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ17	07194800	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ18	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ19	07194800	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ20	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ21	07194700, 1	2SA1015 Y, GR
	or 07197001, 2	2SA733A Q, P
	or 07299601, 2	2SA1115 E, F
eQ22	07194700, 1	2SA1015 Y, GR
	or 07197001, 2	2SA733A Q, P
	or 07299601, 2	2SA1115 E, F
eQ23	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ24	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
eQ25	07194800, 1	2SC1815 Y, GR
	or 03059501 ~ 3	2SC945 Q, P, K
	or 07299701, 2	2SC2603 E, F
●ICs		
eIC1	03607700	NJM4558D
eIC2	03612800	CX-193
eIC3	03607700	NJM4558D
eIC4	03607700	NJM4558D
eXO1	09300600	Quartz Element
●Diodes		
eD1 ~ 9	03111600	1S2473D
●Resistors		
eR17	00208900	47kΩ 1/4W M.R.
eR18	00202600	150Ω 1/4W M.R.
eR72	00190700	56Ω 2W N.I.R.
eR85	00183700	56Ω 1W N.I.R.
eR95	00188400	270Ω 2W N.I.R.
eR97	00181500	2.2Ω 1W N.I.R.
●Capacitors		
eC5	00306800	1μF 50V E.B.
eC6	46024900	0.01μF 50V P.C.
eC17	00306800	1μF 50V E.B.
eC33	00382800	22000μF 50V C.C.
eL1	42905000	OSC Coil
●Semi-variable Resistors		
eVR1	10343100	Volume 47kΩ (B)
eVR2	10343100	Volume 47kΩ (B)
eVR3	10350700	Volume 1kΩ (B)

1-3. S-0081 Power Supply Circuit Board <1>

(Stock No. 13067801)

Component Side

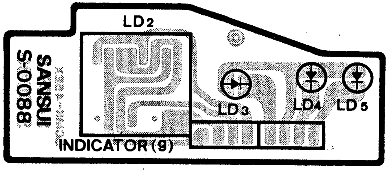

C
B
A
POWER
SUPPLY
Q8
C16
7805
C17
Q9 (h)
E
B
2
1
E
B
SANSUI
3
IC1
S-0081

Parts List

Parts No.	Stock No.	Description
•Transistors		
hQ8	07287000 ~ 2	2SB862 C, D, E
hQ9	07287100 ~ 2	2SD1147 C, D, E
	or 03070400	2SC1983
•IC		
hIC1	07183500	μPC78M05H
	or 03609200	FS7805M

1-4. S-0088 Indicator Circuit Board (Stock No. 13067801)

Component Side


LD2
SANSUI
S-0088
LD3
LD4
LD5
INDICATOR(g)

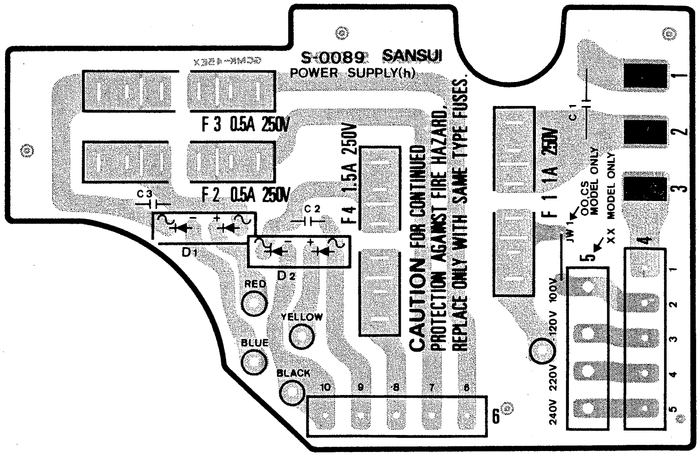
Parts List

Parts No.	Stock No.	Description
gLD2	03194600	LED
gLD3	03194500	LED
gLD4, 5	03190600	LED

1-5. S-0089 Power Supply Circuit Board <2>

(Stock No. 13067901)

Component Side


S-0089 SANSUI
POWER SUPPLY(h)
F 3 0.5A 250V
F 2 0.5A 250V
F 4 1.5A 250V
F 1 1A 250V
C 3
C 2
C 1
D1
D2
RED
YELLOW
BLUE
BLACK
10
9
8
7
6
6
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE FUSES.
240V
220V
120V
100V
JW
5
4
O.C.S MODEL ONLY
XX MODEL ONLY
1
2
3
4
5

Parts List

Parts No.	Stock No.	Description
•Diode		
hD1, 2	03117000	RB-152
•Capacitors		
hC1	00386000	10000pF 150V C.C.
hC2, 3	00407800	0.047μF 100V M.C.
•Fuses		
hF1	04322200	AC Fuse 1A 250V
hF3	04322100	AC Fuse 0.5A 250V
hF4	04322300	AC Fuse 1.5A 250V

- The circuit boards, S-0082, S-0084, S-0085, S-0086 & S-0087 are not supplied as the assembled, however the individual parts on the circuit boards are provided by orders.

1-6. S-0082 Start/Stop, UP/DOWN SW. Circuit Board

Parts List

Parts No.	Stock No.	Description
gS2, 3	11907000	Push Switch

1-7. S-0087 Repeat Circuit Board

Parts List

Parts No.	Stock No.	Description
gLD1	03192900	LED
gS1	11320900	Push Switch

1-8. S-0084 Speed & Disc Size Selector Circuit Board

Parts List

Parts No.	Stock No.	Description
gS4, 5	11320900	Push Switch

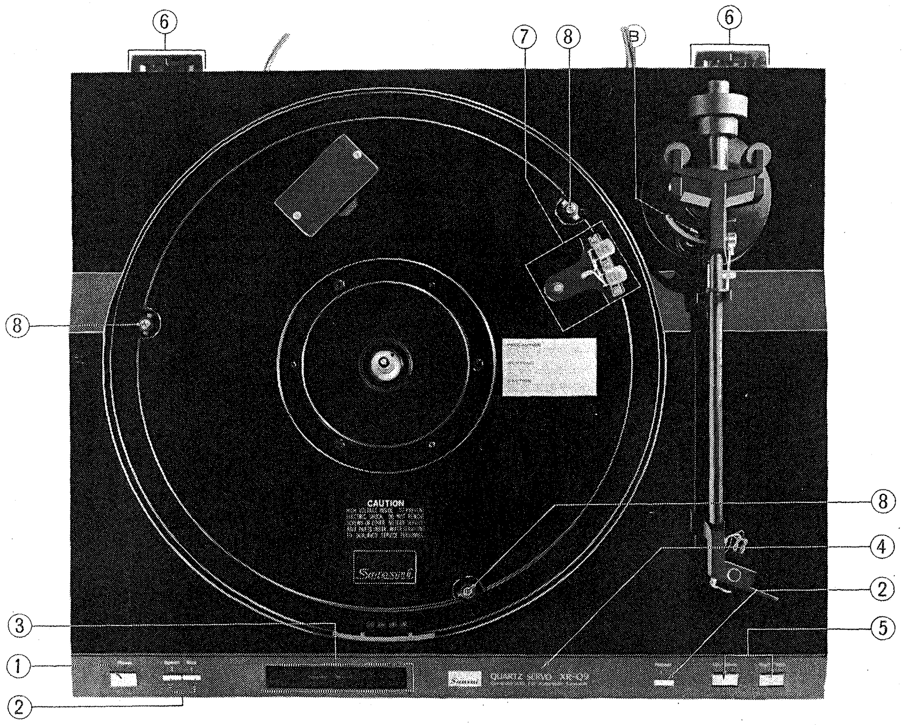
1-9. S-0086 Strobo Indicator Circuit Board

Parts List

Parts No.	Stock No.	Description
gLD6 ~ 9	03194400	LED

2. OTHER PARTS

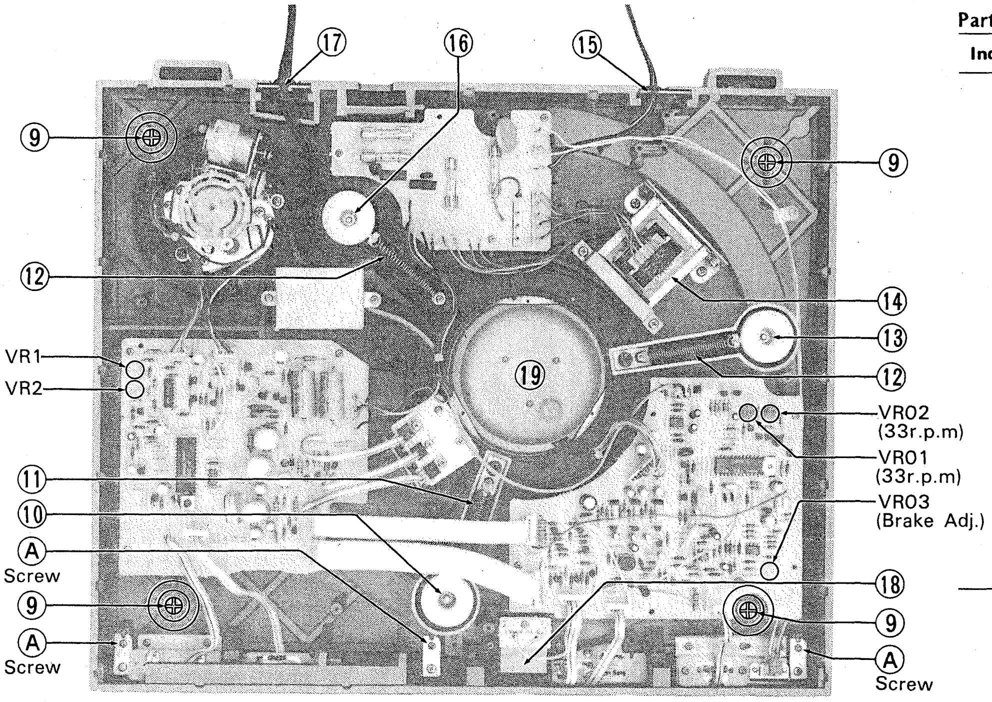
2-1. Top View


⑥
⑦
⑧
B
⑥
⑧
CAUTION
Sansui
⑧
④
②
③
①
②
⑤
QUARTZ SERVO XR-Q9

Parts List

Index No.	Stock No.	Description
1	07204000	Power Switch
	53222200	Push Button
2	53922600	Button Guide
	53222300	Push Button, speed, size, repeat
3	56120400	LED Plate
	53627700	Indicator Glass
4	53627610	Console Panel
5	71021500	Push Button Ass'y start/stop, lifter, UP/DOWN
6	69035700	Hinge, dust cover
7	45030400	Pulse Detecting Head
8	00449900	Shipping Screw
	70122500	Dust Cover
	61122620	Platter
	55030200	Rubber Mat

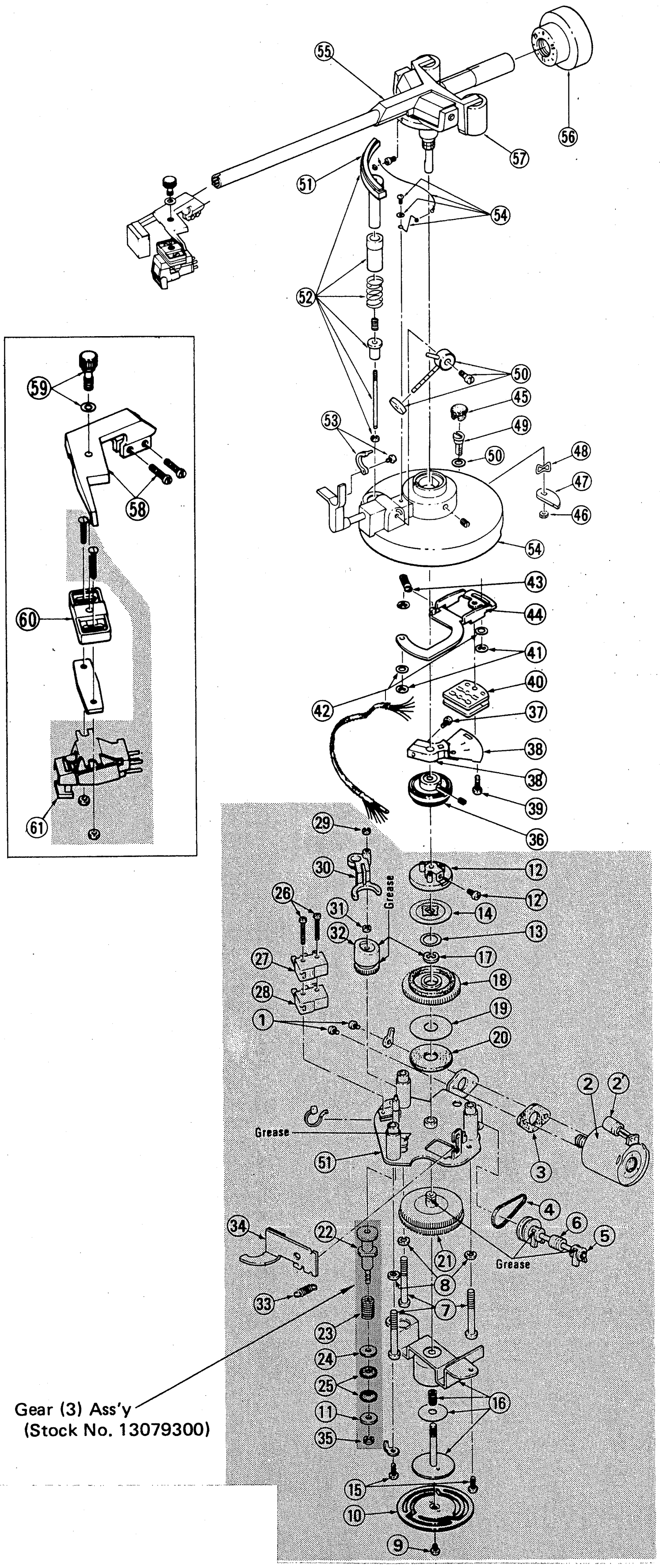
2-2. Bottom View


⑰
⑯
⑮
⑨
⑨
⑫
⑭
⑬
⑫
VR1
VR2
⑲
VR02 (33r.p.m)
VR01 (33r.p.m)
VR03 (Brake Adj.)
⑪
⑩
Ⓐ Screw
⑨
Ⓐ Screw
⑱
⑨
Ⓐ Screw

Parts List

Index No.	Stock No.	Description
9	55122210	Leg
	55221100	Felt Mat, leg
	51832400	Felt Washer
	08320500	PT Type Screw, M4 x 10
10	55122300	Damper Sheet
	69035520	Spring (B)
	55030400	Floating Damper
11	69034200	Tension Spring (B)
12	69035310	Tension Spring
13	55122300	Damper Sheet
	69035420	Spring (A)
	55030400	Floating Damper
14	15003501	Power Transformer
15	38004700	AC Cord
	39106000	Strain Relief
16	55122300	Damper Sheet
	69035620	Spring (C)
	55030400	Floating Damper
17	38103610	Output Cord
	13016300	Strain Relief
18	54420500	Strobo Miller
19	43207300	D.D. Motor

3. EXPLODED VIEW AND PARTS LIST



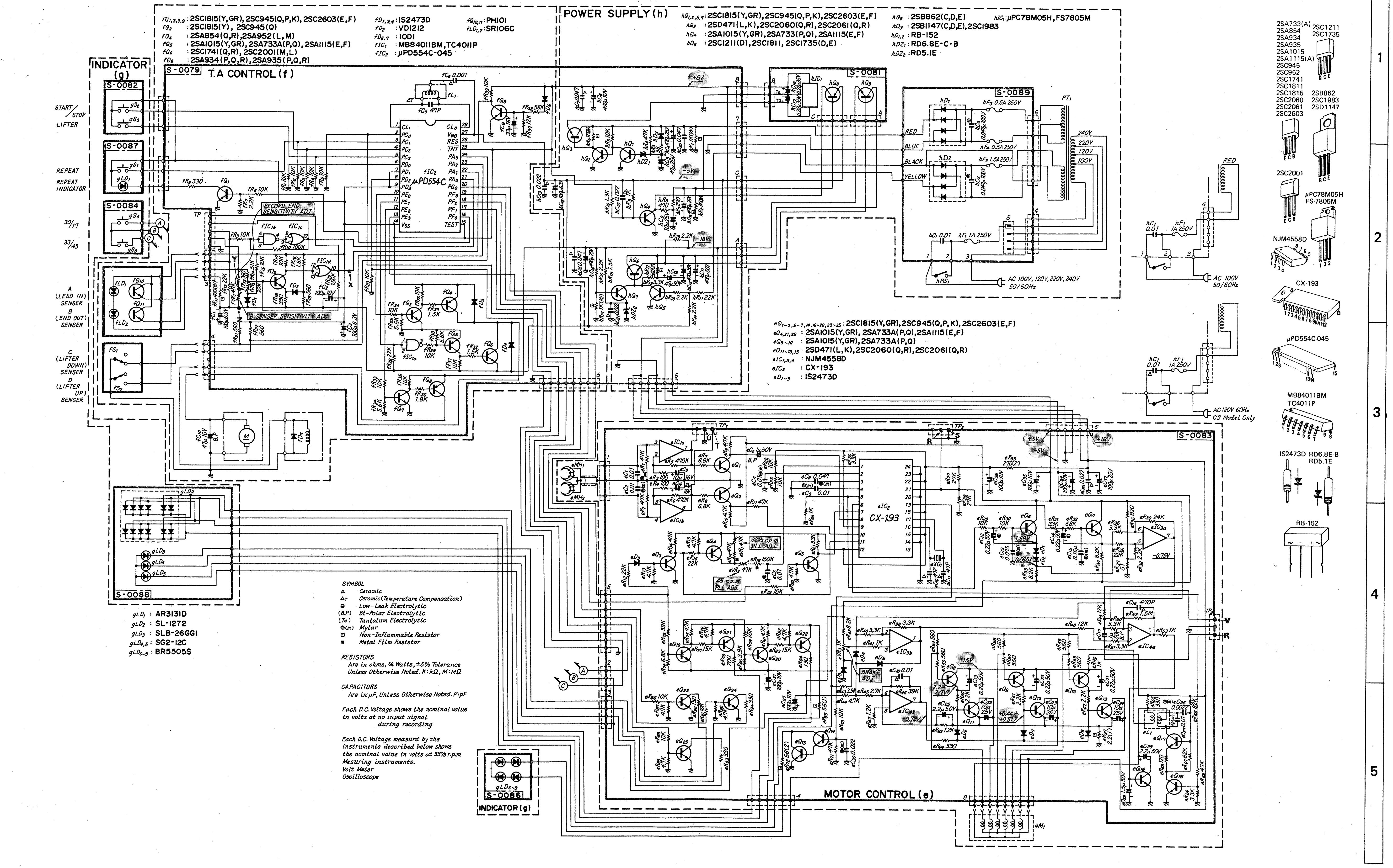
Gear (3) Ass'y
(Stock No. 13079300)

Parts List

Index No.	Stock No.	Description
1	00436500	P Type Screw, M2 x 4
2	43206400	Micro Motor Ass'y
2'	00304000	47μF 10V B.P.
3	55029810	Rubber Cushion
4	60322310	Drive Belt
5	00488900	E Type Washer, D1.5
6	13011110	Worm Gear Ass'y (worm gear, shaft, E type washer)
7	07104600	Tapping Screw, M4 x 40
8	51823300	S Type Washer, M4 x 14
9	00436500	P Type Screw, M2 x 4
10	61423710	Friction Disc
11	13033510	Washer, friction pulley
12	13034010	Clutch Plate (2)
12'	13044700	Tapping Screw, M3 x 6
13	13021800	P Type Washer, M7 x 11
14	13072700	Clutch Plate (1)
15	00454500	PT Type Screw, 3 x 8
16	07266100	Plunger Solenoid Ass'y
17	00489400	E Type Washer, D5.0
18	60020710	Gear (2)
19	51831500	Thrust Washer
20	51831610	Damping Washer
21	13033800	Gear (1)
22	13033910	Gear (3)
23	13033600	Spring, friction
24	00466500	P Type Washer, M3 x 8
25	13033710	Friction Pulley
26	08320400	P Type Screw, M2 x 16
27	11602700	Micro Switch
28	11602700	Micro Switch
29	00488900	E Type Washer, D1.5
30	13034610	Lifter Guide
31	00489000	E Type Washer, D2.0
32	13064510	Lifter Cam Ass'y
33	69034100	Tension Spring (1)
34	64020310	Brake Shoe
35	00468900	E Type Washer, D2.0
36	65121930	TA Drum Ass'y
37	00454500	PT Type Screw, M3 x 8
38	13069700	Screen Plate
38'	65030100	Screen Plate Base
	00436500	Tapping Screw, M2 x 4
39	51628800	P Type Screw, M2.5 x 10
40	07209700	Photo Sensor Ass'y
41	51831800	CS Ring, M2.4
42	51832000	Thrust Washer, 2.5 x 0.5
43	69034200	Tension Spring (2)
44	65030010	Sensor Mounting Arm
45	50624800	Lid
46	00463600	H Type Nut, M3 x 2.4
47	60125600	Adjusting Cam (2)
48	51832100	Wave Washer, M4
49	62025710	Adjusting Cam Shaft
50	51823300	Thrust Washer, 4.0 x 0.25
51	13022700	Lifter Plate Ass'y
52	13022800	Lifter Ass'y (Lifter Plate Ass'y, cylinder, elevation spring, absorber, spring, lifter chip adjusting bar)
53	13022500	Arm Rest Ass'y (Arm Rest, clamp, clamp fixing screw, fixing screw)
54	13022600	IFC Ass'y (Weight, long & short bars, thread, washer, screw, thread hanger)
55	13022000	Tonearm Ass'y
56	13022900	Main Weight Ass'y
57	13023000	Balance Weight Ass'y
58	13022100	Headshell (A) Ass'y
59	13022200	Mounting Screw Ass'y
60	13022400	Headshell (B)
61	13010800	Cartridge Ass'y SV-101
	13022300	Lead Wires for Cartridge

4. SCHEMATIC DIAGRAM

- * Design and specifications subject to change without notice for improvement.
- * La présentation et les spécifications sont susceptibles d'éter modifiées sans préavis par suites d'améliorations éventuelles.
- * Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.


A
B
C
D
E
F
G
H
1
2
3
4
5
INDICATOR (g)
S-0082
S-0087
S-0084
S-0088
S-0079
T.A CONTROL (f)
POWER SUPPLY (h)
S-0081
S-0089
S-0083
S-0086
INDICATOR (g)
MOTOR CONTROL (e)
START/STOP LIFTER
REPEAT
REPEAT INDICATOR
30/17
33/45
A (LEAD IN) SENSER
B (END OUT) SENSER
C (LIFTER DOWN) SENSER
D (LIFTER UP) SENSER
RECORD END SENSITIVITY ADJ.
B SENSER SENSITIVITY ADJ.
fIC2 μPD554C
CX-193
33⅓ r.p.m PLL ADJ.
45 r.p.m PLL ADJ.
BRAKE ADJ.
+5V
-5V
+18V
+15V
1.68V
0.565V
-0.75V
-0.73V
2.2~2.7V
+0.44V~+0.51V
RED
BLUE
BLACK
YELLOW
240V
220V
120V
100V
PT1
hF3 0.5A 250V
hF2 0.5A 250V
hF2 1.5A 250V
hF1 1A 250V
hPS1
AC 100V, 120V, 220V, 240V 50/60Hz
AC 100V 50/60Hz
AC120V 60Hz CS Model Only
2SA733(A)
2SA854
2SA934
2SA935
2SA1015
2SA1115(A)
2SC945
2SC952
2SC1741
2SC1811
2SC1815
2SC2060
2SC2061
2SC2603
2SC1211
2SC1735
2SB862
2SC1983
2SD1147
2SC2001
μPC78M05H
FS-7805M
NJM4558D
CX-193
μPD554C-045
MB84011BM
TC4011P
IS2473D
RD6.8E-B
RD5.1E
RB-152

$fQ_{1,3,7,9}$: 2SC1815(Y,GR), 2SC945(Q,P,K), 2SC2603(E,F)
fQ_2 : 2SC1815(Y), 2SC945(Q)
fQ_4 : 2SA854(Q,R), 2SA952(L,M)
fQ_5 : 2SA1015(Y,GR), 2SA733A(P,Q), 2SA1115(E,F)
fQ_6 : 2SC1741(Q,R), 2SC2001(M,L)
fQ_8 : 2SA934(P,Q,R), 2SA935(P,Q,R)
$fD_{1,3,4}$: IS2473D
fD_2 : VD1212
$fD_{6,7}$: 10D1
fIC_1 : MB84011BM, TC4011P
fIC_2 : μPD554C-045
$fQ_{10,11}$: PH101
$fLD_{1,2}$: SR106C

$hQ_{1,2,5,7}$: 2SC1815(Y,GR), 2SC945(Q,P,K), 2SC2603(E,F)
hQ_3 : 2SD471(L,K), 2SC2060(Q,R), 2SC2061(Q,R)
hQ_4 : 2SA1015(Y,GR), 2SA733(P,Q), 2SA1115(E,F)
hQ_6 : 2SC1211(D), 2SC1811, 2SC1735(D,E)
hQ_8 : 2SB862(C,D,E)
hQ_9 : 2SB1147(C,D,E), 2SC1983
$hD_{1,2}$: RB-152
hDZ_1 : RD6.8E-C·B
hDZ_2 : RD5.1E
hIC_1 : μPC78M05H, FS7805M

$eQ_{1\sim3,5\sim7,14,16\sim20,23\sim25}$: 2SC1815(Y,GR), 2SC945(Q,P,K), 2SC2603(E,F)
$eQ_{4,21,22}$: 2SA1015(Y,GR), 2SA733A(P,Q), 2SA1115(E,F)
$eQ_{8\sim10}$: 2SA1015(Y,GR), 2SA733A(P,Q)
$eQ_{11\sim13,15}$: 2SD471(L,K), 2SC2060(Q,R), 2SC2061(Q,R)
$eIC_{1,3,4}$: NJM4558D
eIC_2 : CX-193
$eD_{1\sim9}$: IS2473D

gLD_1 : AR3131D
gLD_2 : SL-1272
gLD_3 : SLB-26GG1
$gLD_{4,5}$: SG2-12C
$gLD_{6\sim9}$: BR5505S

SYMBOL

△	*Ceramic*
$\triangle_T$	*Ceramic (Temperature Compensation)*
◒	*Low-Leak Electrolytic*
(B.P)	*Bi-Polar Electrolytic*
(Ta)	*Tantalum Electrolytic*
◉(m)	*Mylar*
⊡	*Non-Inflammable Resistor*
■	*Metal Film Resistor*

RESISTORS
Are in ohms, 1/4 Watts, ±5% Tolerance Unless Otherwise Noted. K: kΩ, M: MΩ

CAPACITORS
Are in μF, Unless Otherwise Noted. P: pF

Each D.C. Voltage shows the nominal value in volts at no input signal during recording

Each D.C. Voltage measurd by the instruments described below shows the nominal value in volts at 33⅓ r.p.m
Mesuring instruments.
Volt Meter
Oscilloscope

5. ADJUSTMENTS

* *About operations, and adjustments unlisted in thie bulletin, refer to the XR-Q9 Service Manual. Repeat adjustment is not necessary.*

5-1. Adjustment of Screen Plate Installation Position

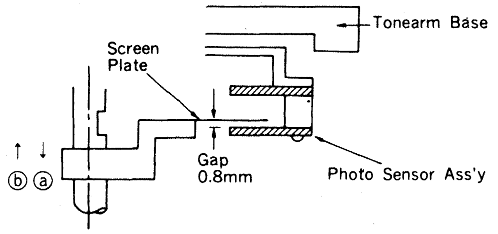
Adjust the position whenever the tonearm is replaced. With the tonearm placed on the arm rest, install the screen plate to the tonearm shaft, as shown in Figs. 5-1 (A) and (B).

5-2. Adjustment of B Sensor Output

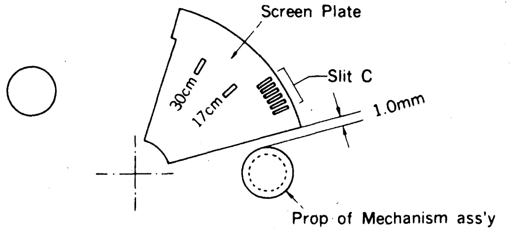
A. Output level adjustment

1) Connect the + terminal of an oscilloscope to point Ⓨ of S-0079 and – terminal to Ⓩ in schematic diagram on page 6 and set the selector switch DC/AC to DC, then the test ranges 2 V/div. and 10 msec./div.
2) Shift the tonearm by hand to the lead-out groove on the disc and slowly move the tonearm right and left in such a way that it takes about two seconds for the slit C (Fig. 5-1) to pass through between the LED and the phototransistor.

Fig. 5-1 Installation of Screen Plate
(A) Side View of Screen Plate

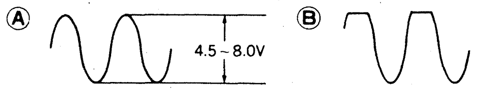


(B)Bottom View of Screen Plate
Note: Tonearm is placed on its rest



3) During this movement, adjust the output level by rotating the volume, B sensor sensitivity adj., VR1 of S-0079 so as to be set between 4.5 and 8 V without any distortion of the waveform as shown in Fig. 5-2.

Fig. 5-2 Output Waveform Adjustment on B-Sensor

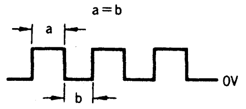


4) If it is impossible to adjust the output level to 4.5 ~ 8 V, reduce the gap between the screen plate and photo sensor ass'y to 0.8 mm or less as shown in Fig. 5-1.

B. Duty ratio adjustment of output pulse waveform

1) Connect an oscilloscope across point Ⓧ of S-0079 board and GND in schematic diagram on page 6, then set the selector switch to DC and the test ranges to 2 V/div., 0.1 sec./div.
2) Shift the tonearm by hand to the lead-out groove on disc, then slowly move the tonearm right to left in such a way that it takes about two seconds for the slit C (Fig. 5-1) to pass through between the LED and the phototransistor.
3) During this movement, adjust the duty ratio of the output pulse waveform by rotating the volume, record end sensitivity adj., VR2 on S-0079 as shown in Fig. 5-3.

Fig. 5-3



* *Adjustments unlisted*
Lead-in, Platter height, Lifter height, Gap between TA drum & Clutch plate (2) also between Pulse Detecting Head & Platter.

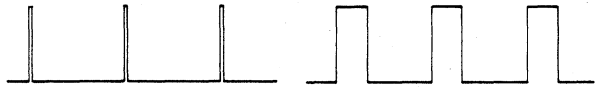
5-3. Revolution Speed Adjustment (PLL Adj.)

Note: 1) Perform 45 rpm speed adj. first, then adjust 33 rpm rev. speed.
2) For this adj., put a rubber sheet on the platter.

A. How to adjust with an oscilloscope

1) Connect oscilloscope leads across point Ⓡ and Ⓢ (GND) of TP2 on S-0083 in schematic diagram of this issue, then set the test ranges to 2 V/div. and 0.5 msec./div.
2) Set the speed selector to 45 rpm.
Adjust the waveforms on the scope to one (A) shown in Fig. 5-4 by rotating eVR2, 45 rpm PLL adj., (S-0083); in this case, make pulse width as narrow pitch as possible.
3) Set selector switch to 33 rpm.
Adjust the pulse waveforms to one (A) shown in Fig. 5-4 as well by rotating eVR1, 33-1/3 rpm PLL adj., (S-0083).

Fig. 5-4



(A) Correct Pulse Waveform **(B) Incorrect Pulse Waveform**

* Adjust the pulse width as narrow as possible.

B. How to adjust without an oscilloscope

1) Set the speed selector to 45 rpm.
Bring the strobo-pattern to standstill by rotating eVR2 (S-0083).
2) Set the speed selector to 33 rpm.
Bring the strobo-pattern to standstill as well by rotating eVR1 (S-0083).

5-4. Electronic Brake Adjustment

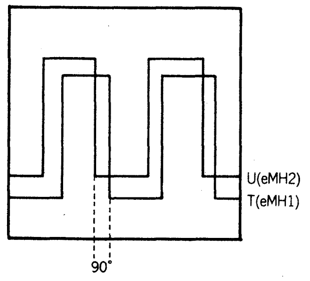
Connect two leads from volt-meter across points Ⓥ and Ⓦ of TP3 in schematic diagram on page 6, then make the set operate. Adjust the voltage value between Ⓥ & Ⓦ to 0.55 V rotating eVR3 (S-0083).

5-5. Phase Adjustment between two Pulse Detecting Heads

Note: The pulse detecting heads is supplied as heads' ass'y with completely adjusted distance between them (eMH1, eMH2). Avoid performing this adjustment without dual trace oscilloscope.

1) Connect oscilloscope between Ⓣ, and Ⓤ (GND), (TP1) of S-0083 on the schematic diagram, then make the set operate.
2) Adjust the pulse detecting head screw so that the signal generated from eMH1 may lag signal generated from eMH2 by a phase angle of 90 degrees as shown in Fig. 5-5.

Fig. 5-5



6. MAIN PARTS REPLACEMENT

6-1. Tonearm Assembly (55) Replacement

1) Remove the bottom plate.
2) Loosen three screws ⑦ to remove the auto mechanism assembly.
3) Loosen a screw fixing the TA drum ㊱.
4) Loosen the screw ㊲ to remove the screen plate ㊳.
5) Remove the lead wires from the tonearm.
6) Remove a string of the I.F.C. Ass'y (54).
7) Loosen the fastening nut to extract the tonearm.

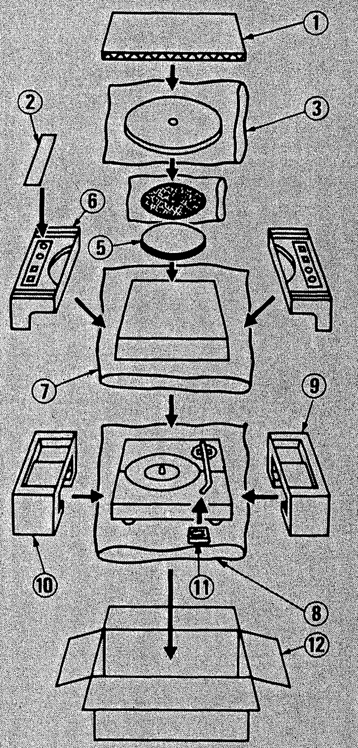
* In installing the slit plate assembly, and TA drum assembly, refer to Figs. 5-1 (A) and (B), and Fig. 3-6 in XR-Q9 Service Manual.

6-2. Plunger Solenoid Assembly ⑯ Replacement

1) Remove the bottom plate.
2) Loosen three screws ⑦ to extract the auto mechanism assembly.
3) Remove the E type washer ⑬
4) Loosen two screws ⑮ to remove the plunger assembly.

7. PACKING LIST

Index No.	Stock No.	Description
1	90123900	Corrugated Board
2	90226600	Plastic Sheet
3	91166000	Polyethylene Bag, platter
4	91165200	Polyethylene Bag, rubber mat
5	90124000	Corrugated Board, platter
6	90227300	Inner Packing (upper)
7	91166140	Polyethylene Bag, dust cover
8	91122710	Polyethylene Bag, turntable unit
9	90227410	Inner Packing (right)
10	90227510	Inner Packing (left)
11	90227910	Arm Packing
12	90029820	Carton Case



8. ACCESSORY LIST

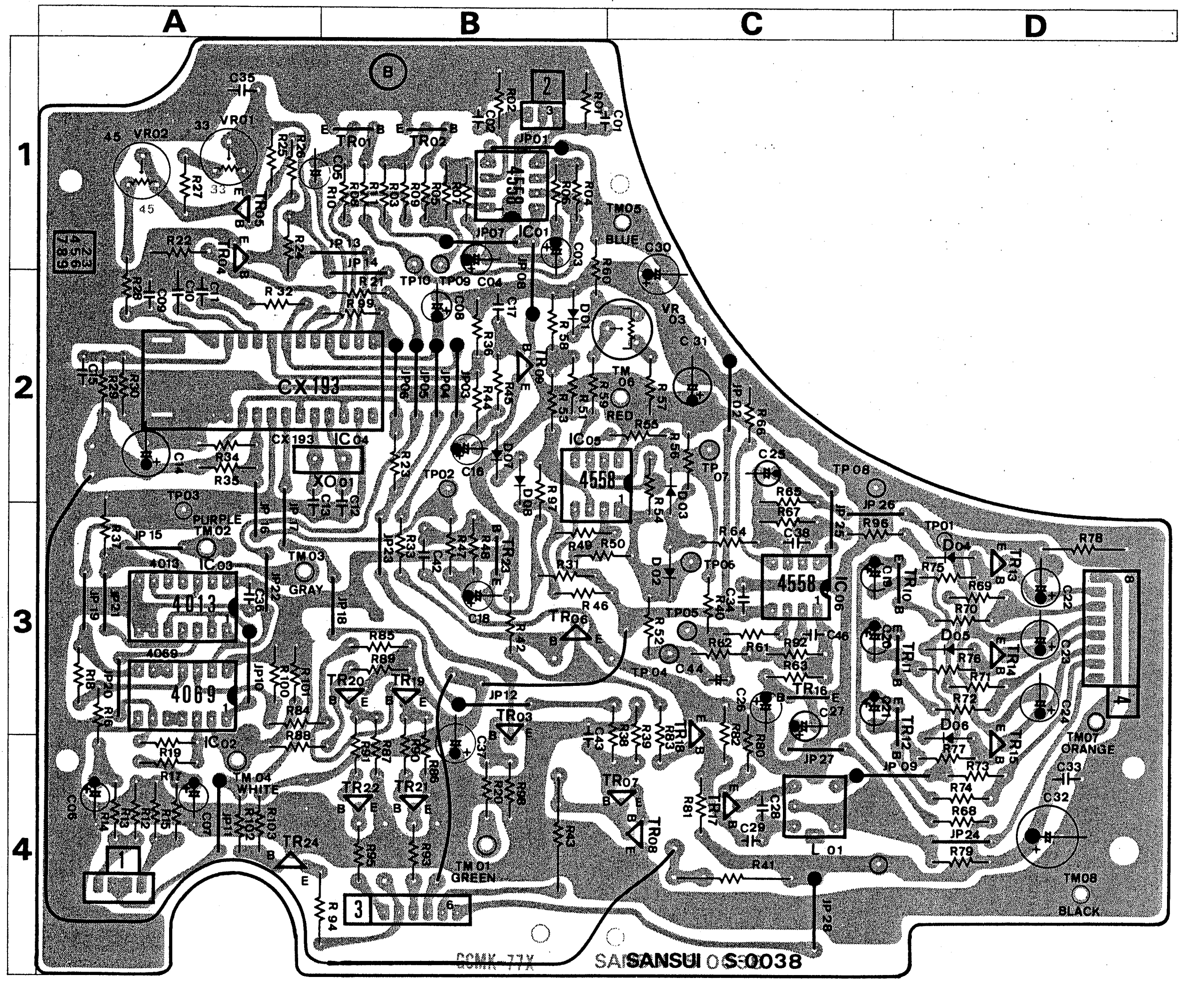
Stock No.	Description
52432210	Cartridge Mounting Gauge
13010800	Cartridge Ass'y SV-101 (incl. stylus, fixing screws)
13010900	Stylus SN-101
13012300	45 rpm Adaptor
13022900	Main Weight Ass'y
92052300	Operating Instructions

Sansui
SANSUI ELECTRIC COMPANY LTD.: 14-1, Izumi 2-chome, Suginami-ku, Tokyo 168 Japan PHONE:(03) 323-1111/TELEX:232-2076
SANSUI ELECTRONICS CORPORATION: 1250 Valley Brook Ave. Lyndhurst, N.J. 07071 U.S.A.
333 West Alondra Blvd. Gardena, California 90247 U.S.A.
3036 Koapaka 5t. Honolulu, Hawaii 96819 U.S.A.
SANSUI ELECTRONICS (U.K.) LTD.: Unit 10A, Lyon Industrial Estate, Rockware Avenue, Greenford, Middx UB6, OAA, England
SANSUI ELECTRONICS G.M.B.H.: Arabella center, 6 Frankfurt AM Main, Lyoner Strasse 44-48, West Germany

Printed in Japan (410830M)〈36456100〉

5-2. S-0038 Servo Circuit Board (Stock No. 13000901)

Conductor Side

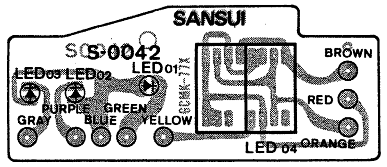

A
B
C
D
1
2
3
4
CX193
4558
4013
4069
SANSUI S-0038
GCMK-77X

Parts List

Parts No.	Stock No.	Description
●Transistor		
TR01	03059501 ~ 3	2SC945 Q, P, K
TR05	03005100, 1	2SA733A P, Q
TR06	03059501 ~ 3	2SC945 Q, P, K
TR08	03069100, 1	2SC2060 P, Q
TR09	03059501 ~ 3	2SC945 Q, P, K
TR10	03006800, 1	2SA733-2 P, Q
TR13	03085901, 2	2SD471 L, K
TR16	03059501, 2	2SC945 Q, P
TR21	03006800, 1	2SA733-2 P, Q
TR23	03059501, 2	2SC945 Q, P
●IC		
IC01	03607700	NJM4558D
IC02	03605700	MSM4069
	07107600	TC4069BP
IC03	03611700	MSM4013RS
	07107500	TC4013BP
	07107000	MSM4013BRU
IC04	03612800	CX-193
IC05	03607700	NJM4558D
XO01	09300600	NC-18C, Quartz
●Diode		
D01	03111600	1S2473D
R27	00208900	47Ω 1/4W M.R.
R28	00202600	150kΩ 1/4W M.R.
R41A	00147500	270Ω 2W N.I.R.
R43	00142800	56Ω 1W N.I.R.
R78	00140300	2.2Ω 1W N.I.R.
R94	00149800	56Ω 2W N.I.R.
C05	00306800	1μF 50V B.P.
C38	00380300	10000pF 50V C.C.
C44	00306800	1μF 50V B.P.
L01	42905000	OSC Coil
VR01A	10343100	Volume 47kΩ (B)
VR03	10350700	Volume 1kΩ (B)

5-3. S-0042 Indicator Circuit Board (Stock No. 13002501)

Conductor Side


SANSUI
S-0042
LED03 LED02
LED01
PURPLE GREEN
GRAY BLUE YELLOW
BROWN
RED
LED04 ORANGE
GCMK-77X

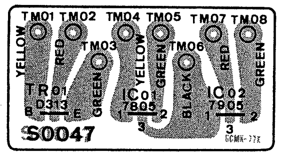
Parts List

Parts No.	Stock No.	Description
LD01	03194500	LED
LD02, 03	03190600	LED
LD04	03194600	LED

5-4. S-0047 Power Supply Circuit Board <1>

(Stock No. 13002901)

Conductor Side


TM01 TM02 TM04 TM05 TM07 TM08
TM03 TM06
YELLOW RED GREEN YELLOW GREEN BLACK RED GREEN
TR01
IC01 7805
IC02 7905
S0047
GCMK-77X

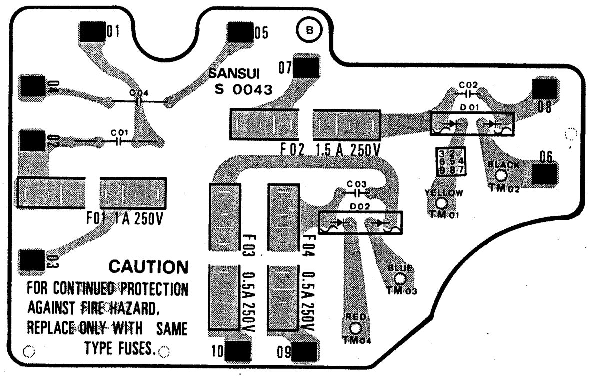
Parts List

Parts No.	Stock No.	Description
●Transistor		
TR01	03065401 ~ 3	2SC1986 O, Y, G
●IC		
IC01	03609200	FS7805M
IC02	03613900	FS7905M

5-5. S-0043 Power Supply Circuit Board <2>

(Stock No. 13003101)

Conductor Side


SANSUI
S 0043
F02 1.5A 250V
F01 1A 250V
F03 0.5A 250V
F04 0.5A 250V
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACE ONLY WITH SAME TYPE FUSES.
YELLOW TM01
BLACK TM02
BLUE TM03
RED TM04

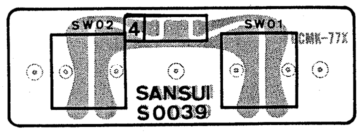
Parts List

Parts No.	Stock No.	Description
●Diode		
D01	03117000	RB-152
C01	00351200	0.033μF 250V F.C. XX
C01	00379300	0.033μF 125V F.C. CSA
C02	00407800	0.047μF 100V F.C.
F01	04322200	AC Fuse 1A 250V
F02	04322300	AC Fuse 1.5A 250V
F03	04322100	AC Fuse 0.5A 250V
F04	04322100	AC Fuse 0.5A 250V

●The circuit boards, S-0039, S-0040, S-0041, S-0045, S-0046 & S-0048 are not supplied as the assembled, the individual parts on the circuit boards, however are provided for orders.

5-6. S-0039 Start/Stop SW Circuit Board

Conductor Side

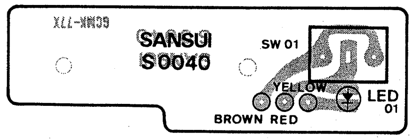

SW02
SW01
SANSUI
S0039
GCMK-77X

Parts List

Parts No.	Stock No.	Description
S01	11907000	Switch

5-7. S-0040 Repeat Circuit Board

Conductor Side

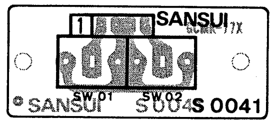

SANSUI
S0040
SW 01
YELLOW
LED 01
BROWN RED

Parts List

Parts No.	Stock No.	Description
LD01A	03192900	LED
S01A	11320900	Push Switch

5-8. S-0041 33/45 reb Selector Circuit Board

Conductor Side

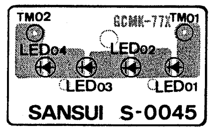

SANSUI
SW01
SW02
S0041

Parts List

Parts No.	Stock No.	Description
S01B	11320900	Push Switch

5-9. S-0045 Strobo Circuit Board

Conductor Side

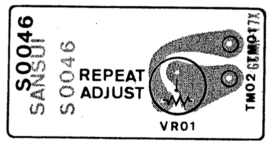

TM02
TM01
GCMK-77X
LED04
LED02
LED03
LED01
SANSUI S-0045

Parts List

Parts No.	Stock No.	Description
LD01	03194400	LED

5-10. S-0046 Repeat Delay Circuit Board

Conductor Side

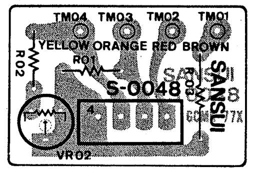

S0046
SANSUI
REPEAT ADJUST
VR01
TM02

Parts List

Parts No.	Stock No.	Description
VR01B	10343700	Volume 470kΩ (B)

5-11. S-0048 B-Sensor Circuit Board

Conductor Side


TM04 TM03 TM02 TM01
YELLOW ORANGE RED BROWN
R01
R02
S-0048
SANSUI
VR02

Parts List

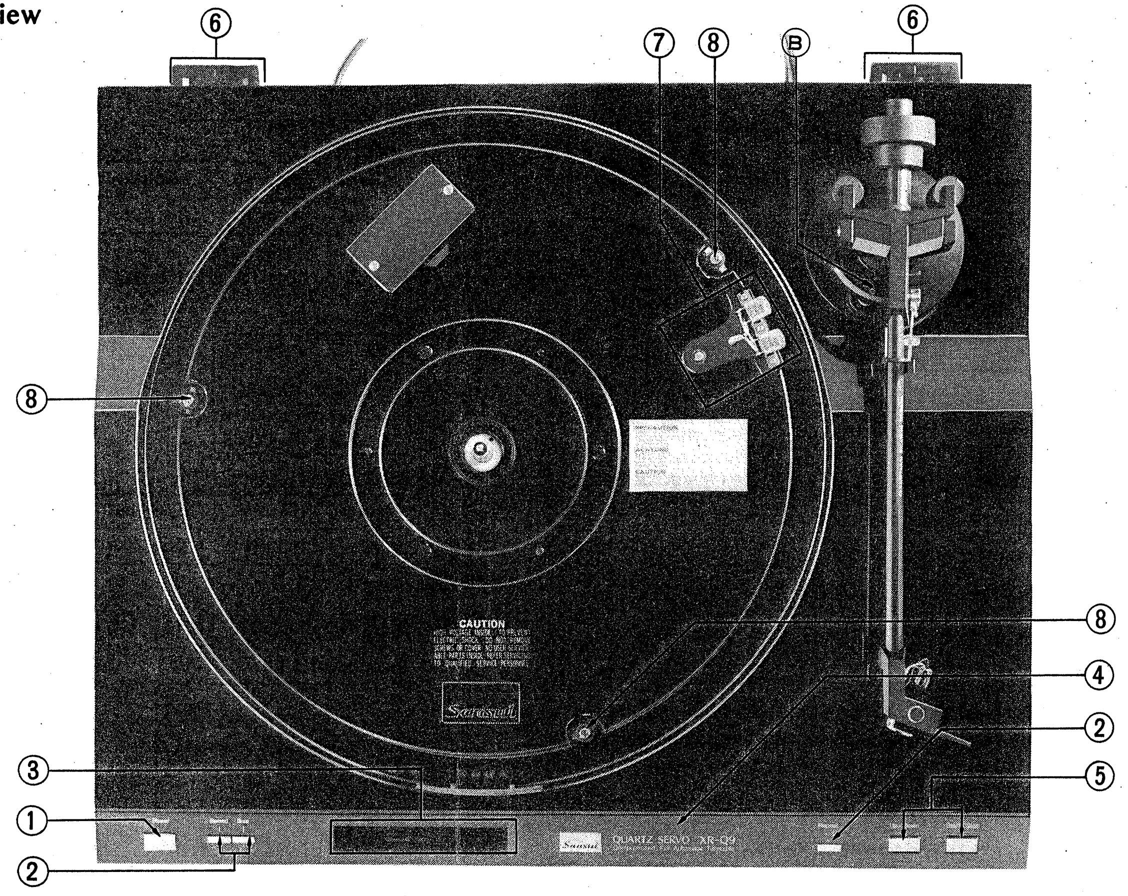
Parts No.	Stock No.	Description
VR02	10353500	Volume 4.7kΩ (B)

● Abbreviations

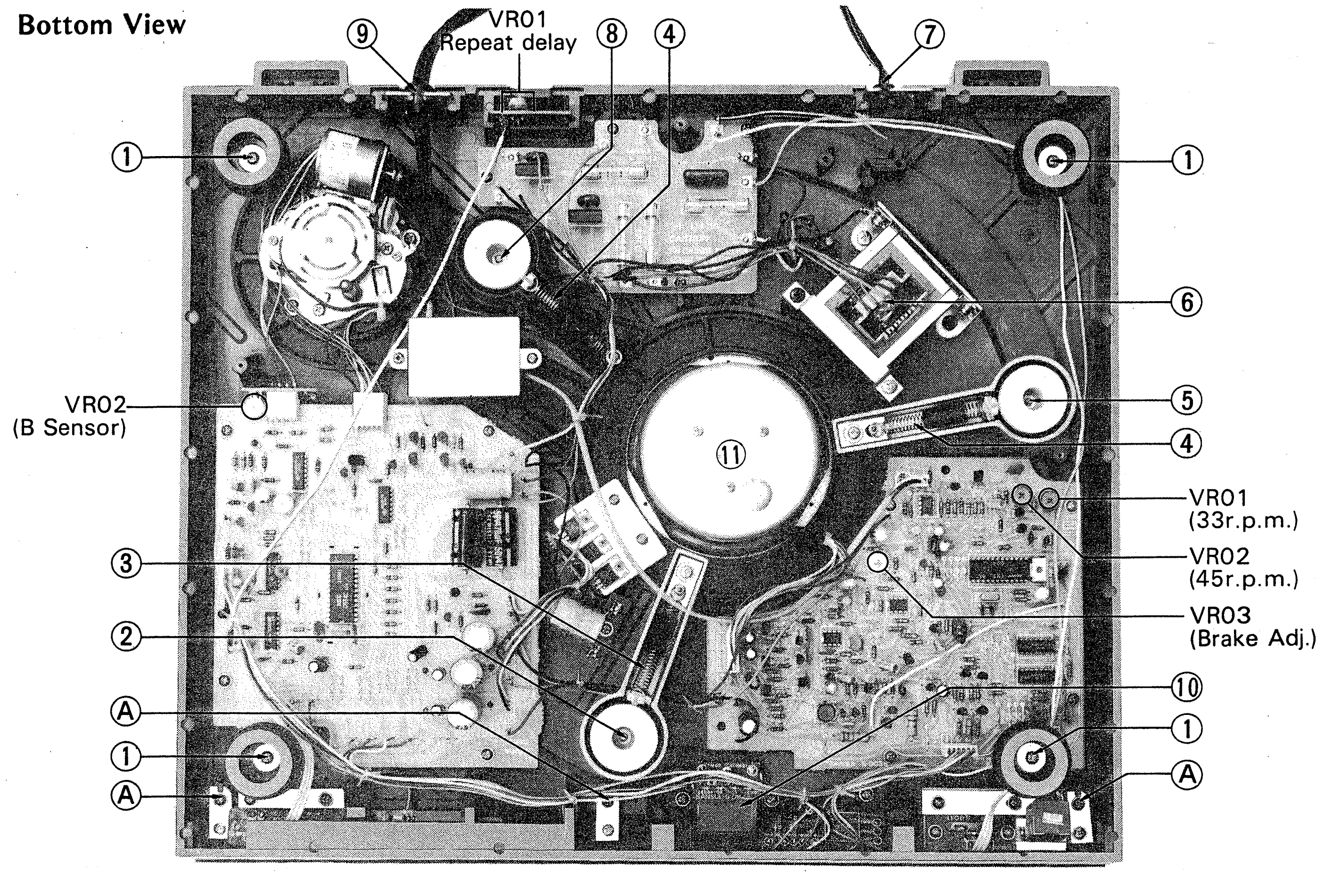
C.R.	Carbon Resistor
S.R.	Solid Resistor
Ce.R.	Cement Resistor
M.R.	Metal Film Resistor
F.R.	Fusing Resistor
N.I.R.	Non-Inflammable Resistor
C.C.	Ceramic Capacitor
C.T.	Ceramic Capacitor, Temperature Compensation
E.C.	Electrolytic Capacitor
E.L.	Low Leak Electrolytic Capacitor
E.B.	Bi-Polar Electrolytic Capacitor
E.BL.	Low Leak Bi-Polar Electrolytic Capacitor
Ta.C.	Tantalum Capacitor
F.C.	Film Capacitor
M.P.	Metalized Paper Capacitor
P.C.	Polystyrene Capacitor
G.C.	Gimmic Capacitor

6. OTHER PARTS

6-1. Top View



6-2. Bottom View



Parts List <Top View>

No.	Parts No.	Stock No.	Description
1		11312100 53222100	Power Switch Push Button Ass'y, Power, Switch
2		53922600 53222300	Button Guide Push Button, speed, size repeat
3		56120400 53627700	LED Plate Indicator Glass
4		53627600	Console Panel
5		71021500	Push Button Ass'y, Start/Stop, Lifter Up/Down
6		69035700	Hinge, Dust Cover
7		18009801	Pulse Detecting Head
8		00449900	Shipping Screw
		70122500	Dust Cover
		61122600	Platter
		55030200	Rubber Mat

Parts List <Bottom View>

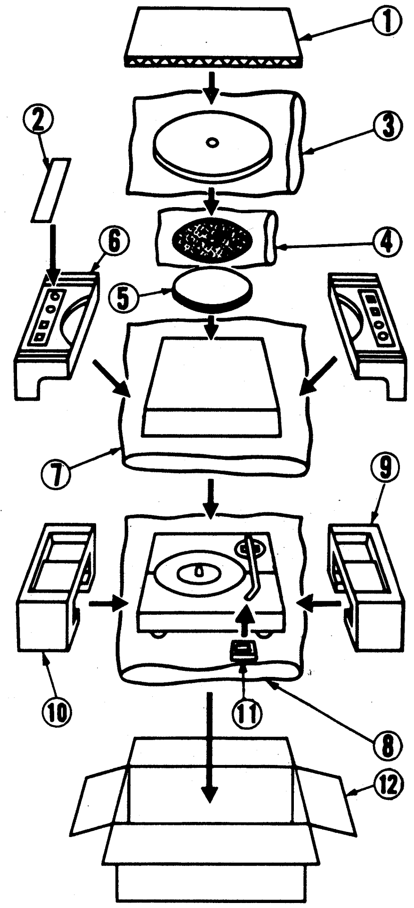
No.	Parts No.	Stock No.	Description
1		55122210 55221000 51832400 51628900	Leg Felt Mat, leg Felt Washer PT Type Screw, M4 x 10
2		55122300 69035510 55221000	Damper Sheet Spring (B) Floating Damper
3		13001510	Tension Spring (B)
4		69035310	Tension Spring
5		55122300 69035410 55221000	Damper Sheet Spring (A) Floating Damper
6	PT01	40033500 40033502	Power Transformer XX Power Transformer
7		38004700, 1 39106000	AC Cord Strain Relief
8		55122300 69035610 55221000	Damper Sheet Spring (C) Floating Damper
9		13015200 13016300	Output Cord Strain Relief
10		54420500	Strobo Miller
11		43207300	DD Motor

• Note

As to C.S.A., B.S., ES, and xx marked in the Parts Lists, note the followings:

C.S.A.	Parts used in the unit which is applicable to Canada under industrial standards.
B.S.	Parts used in the unit which is applicable to British under industrial standards.
E.U.	Parts used in the unit which is applicable to Sweden, Denmark, Norway, Finland, West Germany, and Switzerland under industrial standards.
XX	Parts used in the unit which is applicable to other countries excepting mentioned above.

7. PACKING LIST



Parts List

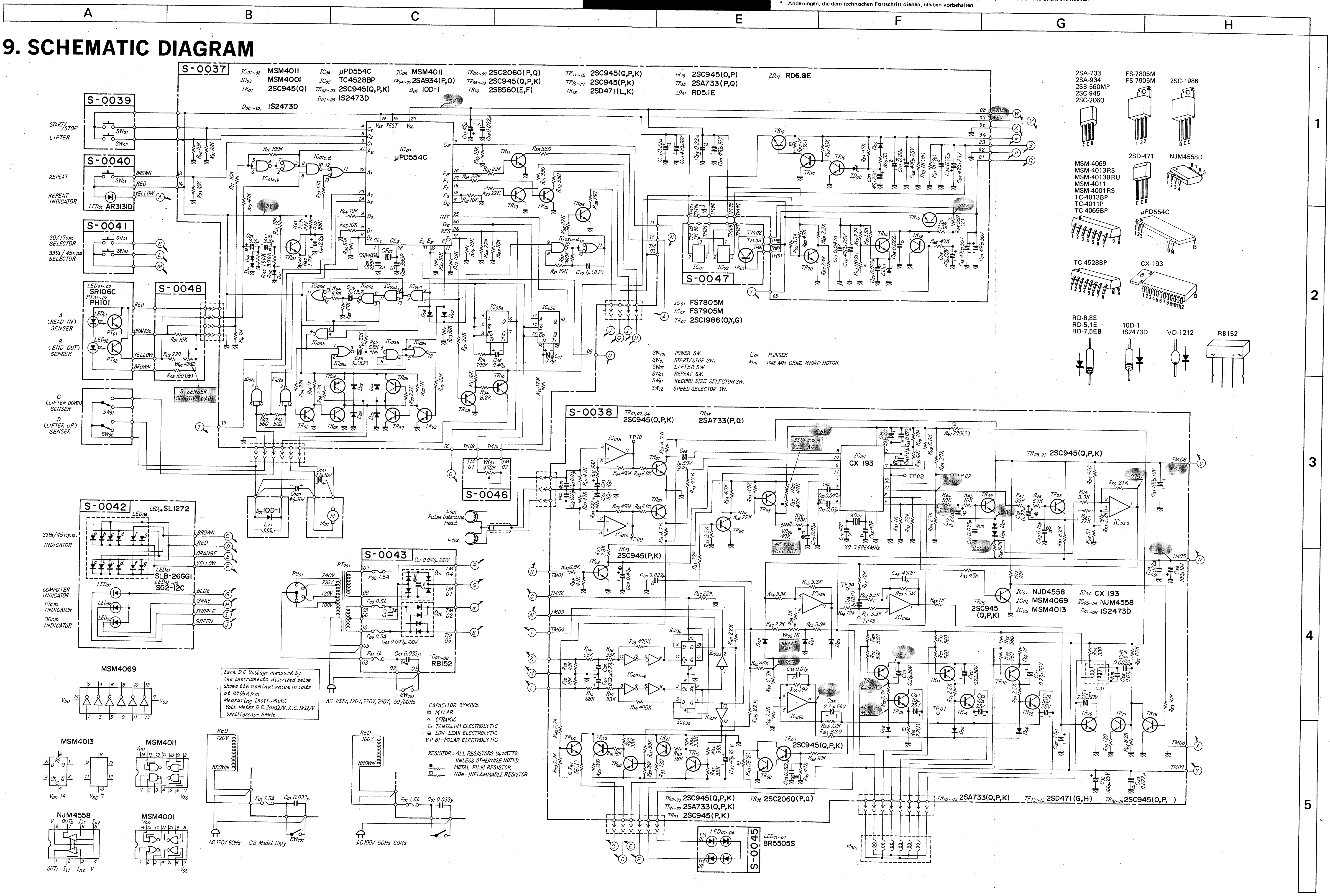
Part No.	Stock No.	Description
1	90123900	Corrugated Board
2	90226600	Plastic Sheet
3	91166000	Polyethylene Bag, platter
4	91165200	Polyethylene Bag, rubber mat
5	90124000	Corrugated Board, platter
6	90227300	Inner Packing, (upper)
7	91166140	Polyethylene Bag, dust cover
8	91122700	Polyethylene Bag, turntable unit
9	90227400	Inner Packing, (Right)
10	90227500	Inner Packing, (Left)
11	90227900	Arm Packing
12	90029800	Carton Case

8. ACCESSORY PARTS LIST

Stock No.	Description
52432200	Cartridge Mounting Gauge
13010800	Cartridge Ass'y SV-101 XX (Including stylus, fixing screws)
13010900	Stylus SN-101 XX
13012300	45 rpm Adaptor
13022900	Main Weight Ass'y
92052300	Operating Instructions

- Design and specifications subject to change without notice for improvement.
- La présentation et les spécifications sont susceptibles d'éter modifiées sans préavis par suites d'améliorations éventuelles.
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

9. SCHEMATIC DIAGRAM



A
B
C
D
E
F
G
H
1
2
3
4
5
S-0037
$IC_{01\sim02}$ MSM4011
IC_{03} MSM4001
TR_{01} 2SC945(Q)
IC_{04} μPD554C
IC_{05} TC4528BP
$TR_{02\sim03}$ 2SC945(Q,P,K)
$D_{01\sim05}$ IS2473D
IC_{06} MSM4011
$TR_{04\sim05}$ 2SA934(P,Q)
D_{06} 10D-1
$TR_{06\sim07}$ 2SC2060(P,Q)
$TR_{08\sim09}$ 2SC945(Q,P,K)
TR_{10} 2SB560(E,F)
$TR_{11\sim15}$ 2SC945(Q,P,K)
$TR_{16\sim17}$ 2SC945(P,K)
TR_{18} 2SD471(L,K)
TR_{19} 2SC945(Q,P)
TR_{20} 2SA733(P,Q)
ZD_{01} RD5.1E
ZD_{02} RD6.8E
$D_{08\sim10}$ IS2473D
S-0039
START/STOP
LIFTER
S-0040
REPEAT
REPEAT INDICATOR
LED_{01} AR3131D
S-0041
30/17cm SELECTOR
33⅓/45r.p.m SELECTOR
$LED_{01\sim02}$ SR106C
$PT_{01\sim02}$ PH101
A (READ IN) SENSER
B (END OUT) SENSER
S-0048
B SENSER SENSTIVITY ADJ
C (LIFTER DOWN) SENSER
D (LIFTER UP) SENSER
S-0042
LED_{04} SL1272
33⅓/45 r.p.m. INDICATOR
LED_{01} SLB-26GG1
$LED_{02\sim03}$ SG2-12C
COMPUTER INDICATOR
17cm INDICATOR
30cm INDICATOR
BROWN
RED
ORANGE
YELLOW
BLUE
GRAY
PURPLE
GREEN
S-0046
L_{701} Pulse Detecting Head
L_{702}
S-0043
PT_{701}
PU_{01}
240V
220V
120V
100V
F_{02} 1.5A
F_{03} 0.5A
F_{04} 0.5A
F_{01} 1A
C_{02} 0.047μ 100V
C_{03} 0.047μ 100V
C_{01} 0.033μ
$D_{01\sim02}$ RB152
SW_{701}
M_{01}
D_{07} 10D-1
S-0047
IC_{01} FS7805M
IC_{02} FS7905M
TR_{01} 2SC1986(O,Y,G)
S-0038
$TR_{01,02,04}$ 2SC945(Q,P,K)
TR_{05} 2SA733(P,Q)
TR_{03} 2SC945(P,K)
33⅓ r.p.m P.LL ADJ
45 r.p.m P.LL ADJ
BRAKE ADJ
XO 3.6864MHz
$TR_{09,23}$ 2SC945(Q,P,K)
TR_{06} 2SC945 (Q,P,K)
IC_{01} NJD4558
IC_{02} MSM4069
IC_{03} MSM4013
IC_{04} CX 193
$IC_{05\sim06}$ NJM4558
$D_{01\sim08}$ IS2473D
$TR_{19\sim20}$ 2SC945(Q,P,K)
$TR_{21\sim22}$ 2SA733(Q,P,K)
TR_{23} 2SC945(P,K)
TR_{08} 2SC2060(P,Q)
$TR_{10\sim12}$ 2SA733(Q,P,K)
$TR_{13\sim15}$ 2SD471(G,H)
$TR_{16\sim18}$ 2SC945(P,)
S-0045
$LED_{01\sim04}$ BR5505S
M_{701}
2SA-733
2SA-934
2SB-560MP
2SC-945
2SC-2060
FS-7805M
FS-7905M
2SC-1986
2SD-471
NJM4558D
MSM-4069
MSM-4013RS
MSM-4013BRU
MSM-4011
MSM-4001RS
TC-4013BP
TC-4011P
TC-4069BP
μPD554C
TC-4528BP
CX-193
RD-6.8E
RD-5.1E
RD-7.5EB
10D-1
IS2473D
VD-1212
RB152
MSM4069
MSM4013
MSM4011
NJM4558
MSM4001
V_{DD}
V_{SS}
AC 100V, 120V, 220V, 240V, 50/60Hz
AC 120V 60Hz CS Model Only
AC 100V 50Hz 60Hz

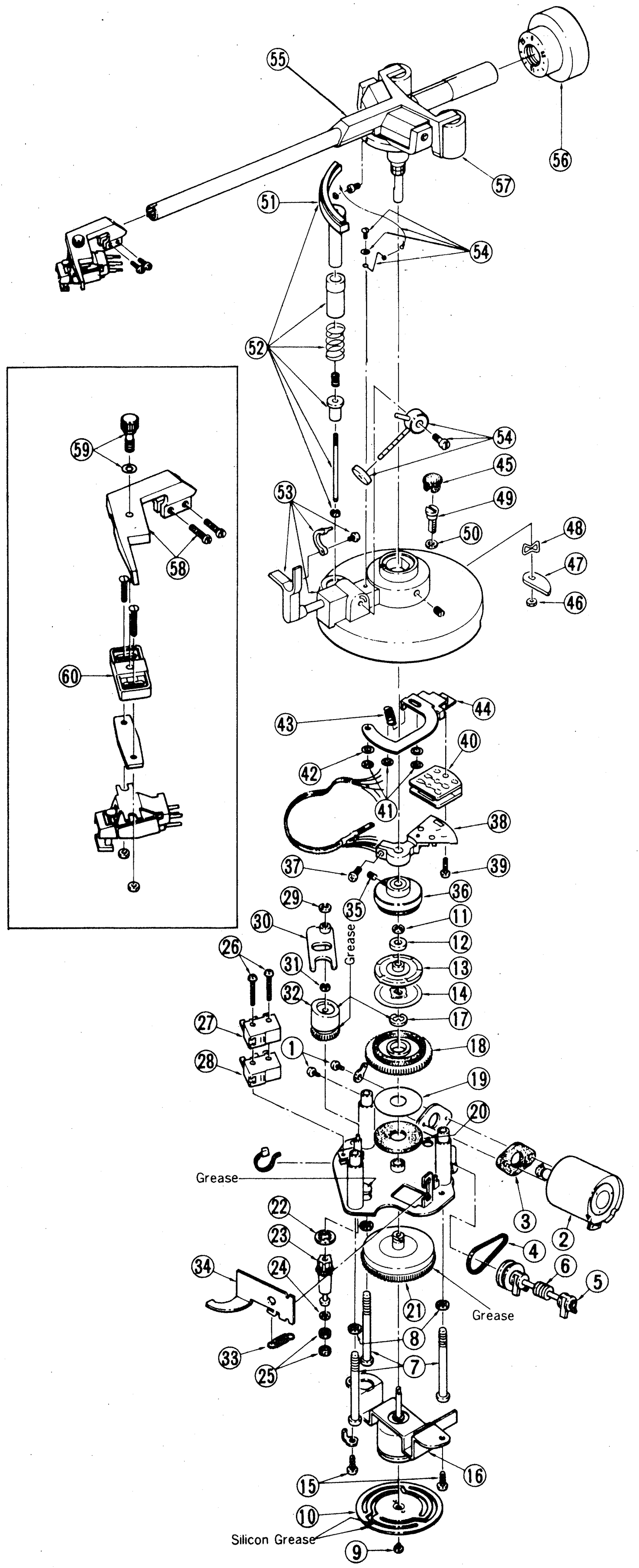
SW_{701} POWER SW.
SW_{01} START/STOP SW.
SW_{02} LIFTER SW.
SW_{01} REPEAT SW.
SW_{01} RECORD SIZE SELECTOR SW.
SW_{02} SPEED SELECTOR SW.
L_{01} PLUNGER
M_{01} TONE ARM DRIVE MICRO MOTOR

Each D.C. Voltage measurd by the instruments discribed below shows the nominal value in volts at 33⅓ r.p.m
Measuring instrument
Volt Meter D.C. 20kΩ/V, A.C. 1kΩ/V
Oscilloscope 5MHz

CAPACITOR SYMBOL
◎ MYLAR
△ CERAMIC
Ta TANTALUM ELECTROLYTIC
◒ LOW-LEAK ELECTROLYTIC
B.P BI-POLAR ELECTROLYTIC

RESISTOR : ALL RESISTORS 1/4 WATTS UNLESS OTHERWISE NOTED
■ METAL FILM RESISTOR
▣ NON-INFLAMMABLE RESISTOR

10. EXPLODED VIEW OF MECHANISM Ass'y & PARTS LIST



(Auto Mechanism Ass'y:Stock No.18009200)

Parts List

No.	Parts No.	Stock No.	Description
1		00436500	P Type Screw, M2 x 4
2		43206400	Micro Motor Ass'y
3		55029800	Rubber Cushion
4		60322310	Drive Belt
5		00488900	E Type Washer, D1.5
6		13024800	Worm Gear Ass'y (Worm Gear, Shaft E Type Washer)
7		07104600	Tapping Screw M4 x 40
8		51823300	S Type Washer M4 x 14
9		00436500	P Type Screw M2 x 4
10		61423700	Friction Disc
11		00489000	E Type Washer D2.0
12		51831700	Damping Washer (2)
13		64220810	Clutch Plate (2)
14		64220700	Clutch Plate (1)
15		00440900	PT Type Screw Type 2.3 x 8
16		43402400	Plunger Solenoid Ass'y
17		00489400	E Type Washer, D5.0
18		60020700	Gear (2)
19		51831500	Thrust Washer
20		51831600	Damping Washer (1)
21		60020600	Gear (1)
22		51832300	CS Ring, M5.0
23		60020810	Gear (3)
24		51825700	Thrust Washer, M4 x 0.5
25		6142300	Friction Pulley
26		00436600	P Type Screw, M2 x 16
27		11602700	Micro Switch
28		11602700	Micro Switch
29		00489000	E Type Washer, D2.0
30		65122000	Lifter Guide
31		00489000	E Type Washer, D2.0
32		60125400	Lifter Cam
33		69034100	Tension Spring (1)
34		70721310	Brakeshoe Ass'y
35		51623300	SC Type Screw, M3 x 5
36		65121900	TA Drum
37		00440900	PT Type Screw 3 x 8
38		13024600	Screen Plate Ass'y
39		51628800	P Type Screw M2.5 x 10
40		77900100	Photo Sensor Ass'y
41		51831800	CR Ring M2.4
42		51832000	Thrust Washer 2.5 x 0.5
43		69034200	Tension Spring (2)
44		65030000	Sensor Mounting Arm
45		50624800	Lid
46		00463600	H Type Nut M3 x 2.4
47		60125600	Adjusting Cam (2)
48		51832100	Wave Washer, M4
49		62025710	Adjusting Cam Shaft
50		51823300	Thrust Washer 4.0 x 0.25
51		13022700	Lifter Plate Ass'y
52		13022800	Lifter Ass'y (Lifter Plate Ass'y, Cylinder, Elevation Spring, Absorber Spring, Lifter Chip Adjusting bar)
53		13022500	Arm Rest Ass'y (Arm Rest, Clamp, Clamp Fixing Screw, Fixing Screw)
54		13022600	IFC Ass'y (Weight, Bar (long), Bar (short), Thread, Washer, Screw, Thread Hanger)
55		13022000	Tonearm Ass'y
56		13022900	Main Weight Ass'y
57		13023000	Balance Weight Ass'y
58		13022100	Head Shell (A) Ass'y
59		13022200	Mounting Screw Ass'y
60		13022400	Head Shell (B)
		13022300	Lead Wire (cartridge)
		13010800	Cartridge Ass'y XX

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